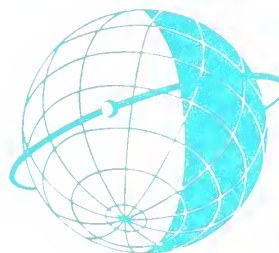


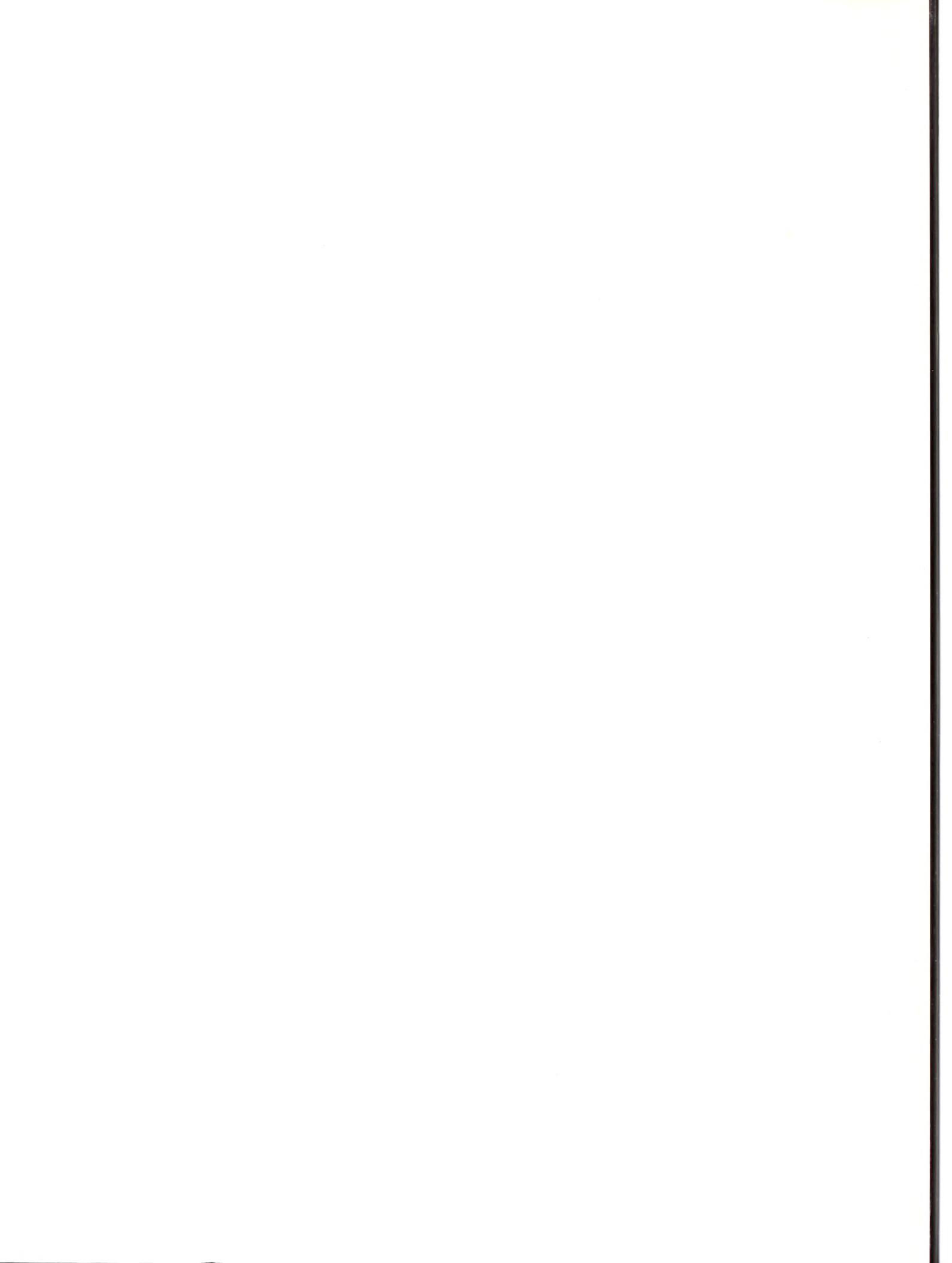
C 55.220/2-3:994

WORLD DATA CENTER A
Oceanography



CATALOGUE OF DATA
CHANGE NOTICE NOS. 52 AND 53

WDCA-OC-94-2



WORLD DATA CENTER A
Oceanography



CATALOGUE OF DATA
CHANGE NOTICE NOS. 52 AND 53
(1 JANUARY- 31 DECEMBER 1993)

WORLD DATA CENTER A
Oceanography
Washington, D.C.

December 1994

ABSTRACT

This change notice lists and describes all data received by WDC-A, Oceanography during the period 1 January - 31 December 1993. It supplements the original six-volume Catalogue of Data, which includes Change Notice Nos. 1-16. The types of data catalogued include oceanographic station data, bathythermograph data, current measurements, biological observations, meteorological observations, and sea surface measurements. An Alphabetical Index of ship names and a Geographical Index of ocean areas assist the user in selecting the required data. Publications are cross referenced by accession number with the WDC-A Catalogue of Accessioned Publications.

NOTE: Country identification numbers used in this publication do not necessarily reflect recent realignments of nations' territorial boundaries and political subdivisions.

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Coordination Office
National Academy of Sciences
2101 Constitution Avenue, N.W.
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Telephone: (202) 334-3368
FAX: (202) 334-1377

GLACIOLOGY (SNOW AND ICE):

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Cooperative Institute for Research in
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University of Colorado
Boulder, Colorado 80309, U.S.A.

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WDC-A, Paleoclimatology
National Geophysical Data Center
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325 Broadway, Colorado 80303, U.S.A.

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ROTATION OF THE EARTH

WDC-A, Rotation of the Earth
Time Service Department
U.S. Naval Observatory
Washington, D.C. 20392, U.S.A.

Telephone: (202) 653-0066
FAX: (202) 653-0587

OCEANOGRAPHY:

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National Oceanic and Atmospheric
Administration
Washington, D.C. 20235, U.S.A.

Telephone: (202) 606-4571
FAX: (202) 606-4586

METEOROLOGY (AND NUCLEAR RADIATION):

WDC-A, Meteorology
National Climatic Data Center
NOAA, E/CC
Federal Building
Asheville, North Carolina 28801, U.S.A.

Telephone: (704) 271-4800
FAX: (704) 271-4246

ROCKETS AND SATELLITES:

WDC-A, Rockets and Satellites
National Space Science Data Center
Goddard Space Flight Center
NASA, Code 633.4
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Telephone: (301) 286-6695
FAX: (301) 286-1635

SOLID-EARTH GEOPHYSICS
(TSUNAMIS, GRAVIMETRY, EARTH
TIDES, RECENT MOVEMENTS OF
THE EARTH'S CRUST, MAGNETIC
MEASUREMENTS, PALEOMAGNE-
TISM AND ARCHEOMAGNETISM,
VOLCANOLOGY, GEOTHERMICS):

World Data Center A,
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FAX: (303) 497-6513

MARINE GEOLOGY AND GEOPHYSICS
(GRAVITY, MAGNETICS, BATHYMETRY,
SEISMIC PROFILES, MARINE SEDIMENT
AND ROCK ANALYSIS):

World Data Center A,
Marine Geology and Geophysics
NOAA, E/GC3
325 Broadway
Boulder, Colorado 80303, U.S.A.

Telephone: (303) 497-6487
FAX: (303) 497-6513

SEISMOLOGY

WDC-A, Seismology
U.S. Geological Survey, MS-967
Box 25046
Denver Federal Center
Denver, Colorado 80225, U.S.A.

Telephone: (303) 273-8500
FAX: (303) 273-8450

SOLAR-TERRESTRIAL PHYSICS
(SOLAR AND INTERPLANETARY
PHENOMENA, IONOSPHERIC
PHENOMENA, FLARE-ASSOCIATED
EVENTS, GEOMAGNETIC VARIATIONS,
MAGNETOSPHERIC AND INTER-
PLANETARY MAGNETIC PHENOMENA,
AURORA, COSMIC RAYS, AIRGLOW):

World Data Center A,
Solar-Terrestrial Physics
NOAA, E/GC2
325 Broadway
Boulder, Colorado 80303, U.S.A.

Telephone: (303) 497-6323
FAX: (303) 497-6513

REMOTELY SENSED LAND DATA:

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U.S. Geological Survey
EROS Data Center
Sioux Falls
South Dakota 57198, U.S.A.

Telephone: (605) 594-6142
FAX: (605) 594-6589

ATMOSPHERIC TRACE GASES:

WDC-A, Atmospheric Trace Gases
Carbon Dioxide Information Analysis
Center
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37831
U.S.A.

Telephone: (615) 574-7817
FAX: (615) 574 4665

PREFACE

The six-volume Catalogue of Data and the loose-leaf Change Notice Numbers 1-16, which have been integrated into the Catalogue, list all oceanographic data received by World Data Center A, Oceanography, from July 1957 through June 1975. The Catalogue has a loose-leaf arrangement of sheets, which have been punched for standard three-ring binders. It includes station location charts for many cruises.

Beginning with Change Notice No. 17, each Change Notice is printed in a modified format as a separate, bound publication describing all data received during a particular six-month or one-year period. The six-volume Catalogue of Data, including Change Notice Nos. 1-16, continues to serve as a reference volume for data received from July 1957 through June 1975. Provision has been made in the modified format for correlating newly received data for a particular cruise with data previously received for that same cruise and already described in a prior Change Notice.

The capability for identifying those data, which have been machine-processed by a national, regional, or responsible national oceanographic data center, has been retained in the modified catalogue format. In addition, this format provides a column for listing the catalogue number from the WDC-A, Oceanography, Catalogue of Accessioned Publications, thus identifying the published report in which the referenced data appear.

Until recently, data gathered before the beginning of the IGY in 1957 had not been extensively accessioned by World Data Center A, Oceanography; however, international bodies, such as the IOC/IODE's Group of Experts on RNODCs and Global Programs have called for WDCs, Oceanography to accession as much historical data as possible, in order to augment the data bases required for support of Climate Research and Global Change Programs. Thus, the acquisition of pre-IGY, as well as post-IGY data, has become a high priority goal for WDC-A. The Catalogue now contains pre-IGY data accessioned by WDC-A and available in automated form to requesters in the international oceanographic community.

WDC-A, Oceanography, welcomes suggestions for improved ways to present information in the Change Notices to the Catalogue of Data. It will make every effort to promptly correct any cataloguing error or omission brought to its attention.

INTRODUCTION

The World Data Center system was established in 1957 to collect data from the numerous and widespread observational programs of the International Geophysical Year (IGY) under the principles set forth by the International Council of Scientific Unions (ICSU) and to make such data readily accessible for an indefinite period of time to interested scientists and scholars. The system consists of World Data Center A (WDC-A) located in the U.S.A.; WDC-B located in the U.S.S.R.; WDC-C located in Western Europe and Japan; and WDC-D located in the People's Republic of China. WDC-A is established under the auspices of the U.S. National Academy of Sciences, where the Coordination Office is located. WDC-A is divided into twelve discipline subcenters whose addresses are given on pages iv and v. These centers are located in institutions which, in the opinion of the Academy, can best serve the interests of science because of their data-handling capabilities for the appropriate scientific disciplines. WDC-A, Oceanography, is collocated with the National Oceanographic Data Center (NODC) in Washington, D.C.

After completion of the IGY program, ICSU delegated the responsibility for the operation of the World Data Centers to its Comité International de Géophysique (CIG) and subsequently to the ICSU Panel on World Data Centres. The framework for continued international exchange of oceanographic data is set forth in ICSU's Guide to the World Data Centre System and the Intergovernmental Oceanographic Commission's (IOC's) Manual on International Oceanographic Data Exchange.

The types of oceanographic data desired for inclusion in the World Data Center system are those from international cooperative expeditions, Global Change and Climate Research Programs, and those associated with various countries' National Oceanographic Programs. Data are to be exchanged internationally in accordance with provisions of the IOC's Manual and the ICSU Guide. Lists of National Oceanographic Programs are compiled by various national committees on oceanography and submitted to the Intergovernmental Oceanographic Commission for dissemination to the international oceanographic community.

Contributors of oceanographic data to the World Data Center system and national committees on oceanography are urged to compare the Catalogue of Data with data gathering cruises and expeditions listed in IOC information documents or on-line information systems to determine whether the cruises actually completed agree with those listed and to ensure that the data resulting from them are transmitted to the World Data Centers in the manner prescribed by the IOC Manual and the ICSU Guide. Data need not be limited to those identified in IOC documents or on-line systems; WDC-A, Oceanography, welcomes all data that fall within the framework of the ICSU Guide and the IOC Manual and that contributors may wish to include in the World Data Center system.

HOW TO USE THE CHANGE NOTICE TO THE CATALOGUE OF DATA

Catalogue Numbering System

The catalogue numbering system uses groups of numbers and letters to designate identifying references for purposes of data archiving and retrieval. A catalogue number consists of numerals for the assigned: series, country, institution, ship and cruise.

Series — The catalogue numbering system is divided into basic groups called series. At present, these consist of the 100 series for data from ships and other mobile platforms and the 200 series for data from shore and fixed stations in the following categories:

- a. Coastal and island stations.
- b. Near shore manned stations; i.e., lightvessels and platforms.
- c. Offshore manned stations; i.e., ocean weather ships.
- d. Unmanned stations; i.e., automatic buoys.
- e. Stations on shipping routes.
- f. Offshore reference stations visited regularly.
- g. Cables in use for oceanographic observations.
- h. Repetitive drifting observations; i.e., ice islands, drifting buoys.

Country — A list in the Indexes section includes all countries and institutions from which this Center has received data during this period together with their discrete identifying numbers. The series and two-digit country number comprise the first three digits of the catalogue number.

Example: For country number 01, Argentina, data from ships and mobile platforms are catalogued as 101, and data from shore and fixed stations as 201.

NOTE: The designations of countries used in this catalogue do not imply the expression of any opinion whatsoever on the part of this Center concerning the legal status of any country or territory, or of its authorities, or concerning the delineation of the frontiers of any country or territory.

Institution — An institution which contributed data, either directly or through its designated national agency or national, regional or specialized oceanographic data center, is assigned a decimal number following the series/country number.

Example: The number 101.01 is assigned to data taken by ships and mobile platforms and received from the Argentine Servicio de Hidrografia Naval, and the number 201.01 is assigned to data taken at shore and fixed stations and received from the same institution.

Ship — Each ship, or in some instances a group of ships operating together, is assigned a letter following the series/country/institution number. The letter is followed by a number assigned to the particular cruise as the data are received.

NOTE: The term “cruise” is used in this catalogue to define, whenever possible, the beginning and ending dates of a series of data collected by a ship, usually identified by the contributing institution with a cruise name and/or number. Sometimes it is necessary to group together several series of data from one or more ships under one catalogue number.

Example: The first cruise data received from the Argentine Servicio de Hidrografia Naval are from the ship CAPITAN CANEPA, which is assigned the letter A, followed by the number 01, thus A-01; the second cruise is A-02, the third A-03, etc. Thus, the catalogue numbers 101.01 A-01, A-02, A-03, etc.

A similar system is used in the 200-series for ships but is not applied to lightvessels and fixed shore stations; for the latter the ship/cruise identifier is omitted. For these categories, the series/country/institution numbers are given, but the lightvessel’s or station’s name must be added instead of the ship/cruise number to complete the catalogue identification.

Example: The Canadian station at Triple Island is identified as: 206.03 Triple Island.

A shore station is listed under the country in or near whose territory it is located. If observations are carried out and the data contributed by an institution of another country, the observing country’s name and institution are listed after the name of the country of location.

How to Use the Alphabetical Index

1. Look up the name of the ship or fixed station in the Alphabetical Index where the related country/institution/ship catalogue numbers are listed.
2. Look up, under the respective countries, the indicated Catalogue Numbers.

How to Use the Geographical Index

1. Obtain the geographic area number and name from the Geographical Index Charts.
2. Look up the list of catalogue numbers of available data for the area in

the Geographical Index.

3. Use these catalogue numbers to locate information about the types and amount of data available.

How to Obtain Data from WDC-A, Oceanography

When communicating with the Center for additional information concerning data, always refer to the specific catalogue numbers for data of interest to you. The catalogue numbers are designed to speed the identification and retrieval of the information or data you need.

Address all correspondence to:

Director, World Data Center A, Oceanography
National Oceanic and Atmospheric Administration
Washington, D.C. 20235, U.S.A.

If you telephone, the numbers are:

The Director: 202-606-4507.
The Associate Director: 202-606-4571.
The Data Archives: 202-606-4571.
FAX: 202-606-4586

If you wish to visit the Center, its office hours are from 6:30 a.m. to 4:00 p.m., Monday through Friday. The Center is not open on Saturdays, Sundays, and U.S. national holidays. If you wish the use of study space, you should if possible give the Center advance notice so that necessary arrangements can be made. There is no charge for the use of study space.

Data Exchange Policy of World Data Center A, Oceanography

World Data Centers are held responsible for the provision of data and information to qualified requesters in the scientific community either in exchange or at a cost not to exceed that of processing and shipping. Unless a requester specifies otherwise, the Center is responsible for using the method which most satisfactorily reproduces the data or information item at the least cost. For certain types of requests, limitations in funding, personnel, or facilities may preclude direct or free provision of data or information by the World Data Center.

Data exchanges between WDC-A, Oceanography and WDC's in the same discipline usually take place without charge for routine exchanges of mutually agreed-upon types of data received by WDC-A in internationally-approved data exchange formats and in readily reproducible media forms. Non-standard data

types are not normally exchanged. The ICSU Panel has now recognized that it is not always economically feasible to copy large data sets from one WDC to another. For certain types of data, the exchange of inventories of available data in a WDC subcenter may be considered acceptable in lieu of the transfer of the actual data sets.

In general, reasonably-sized requests from national or regional contributors to WDC-A, Oceanography may be considered as exchange, and equivalent data thus provided to the requester without charge. For requests for unusually large amounts of data, for specially formatted data, for derived data products, or for data to be obtained from outside the WDC system, WDC-A will normally be required to recover the costs of processing and shipping, or, at its discretion, may arrange for the request to be serviced by an RNODC or a regional, national, or disciplinary center. WDC-A may serve as an intermediary or coordinator for requests for unique types of data or data in other disciplines by placing the originator of the request in contact with the appropriate institution or disciplinary center.

Normally, WDC-A, Oceanography considers its data exchange commitment with a cooperating Data Center to be limited to the servicing of those requests or routine updating requirements intended to build or enhance standard data bases operated by that Center for specific, mutually agreed-upon data types and geographical areas of national or scientific interest. If the availability of funding and resources permit, WDC-A also attempts to assist such cooperating Data Centers when they require special data sets for institutions that are performing project-related research for international climate and global change programs and/or that have historically contributed data to WDC-A, Oceanography through that Data Center. WDC-A, Oceanography is obliged, in any case, to follow the exchange and cost recovery policies of its sponsoring (funding) government agency, while attempting to maintain consistency with data exchange guidelines of the ICSU Panel on WDC's as published in the ICSU Guide.

Data and information may be requested from WDC-A, Oceanography through NODCs, Designated National Agencies, or any other organization identified by national or international initiatives as responsible for communication with the World Data Centers. These materials may also be requested directly from WDC-A, Oceanography. Organizations, institutions, or individuals from Member States of the IOC may apply to the IOC Secretariat or UNESCO for possible assistance in funding their projects.

Data Centers or institutions in the international community that have acquired an automated data set or specialized data product from WDC-A must be aware that original data sets are updated from time to time, errors corrected, or spurious data deleted by the originating data center. Where duplicate data sets are deliberately held in this way, the holder is responsible for making regular

contact, as required, with the originating center to check whether the old data set is still valid, whether it should be deleted, or whether new data are available. WDC-A bears no responsibility in the conduct of these arrangements, except as regards the provision of information in its role as a coordination and referral center.

Acknowledgment of Data Sources

In many instances, data contributed to the Center are unpublished at the time of receipt. Unpublished data are identified in the Change Notice by the absence of a publication number in the column entitled Data Center Reference Number. Accordingly, as stipulated by the Guide, recipients of copies of such data from the Center are reminded that the rights of the original investigators must always be respected. Thus, it is requested that ***if any data supplied by WDC-A, Oceanography are published, due acknowledgment be made of the institution (and where appropriate, the principal investigator) which undertook the original observations.*** To facilitate proper acknowledgment, the Change Notice indicates the originating institution.

PART I
CATALOGUE INDEXES

EXPLANATION OF THE ALPHABETICAL INDEX OF SHIPS AND FIXED STATIONS

This index presents in alphabetical order the names of the ships, lightvessels, platforms, and shore stations that are listed on the Data Information sheets.

Ship or Fixed Station — The name of the ship, lightvessel, platform, light-house, shore station, etc. Names of ships and lightvessels are given in capital letters, with lightvessels identified by (LV) after their name. All others not so identified are shore or other types of fixed stations.

Country — The name of the country that used the ship to collect data, or the name of the country in or near whose territory fixed oceanographic station observations were made. If the data were collected by an institution of another country, the contributing country is listed after the one where the observations were taken.

Catalogue Number — The country and institution numbers and ship letter assigned to each ship are given in this column to facilitate locating data information in the catalogue.

EXPLANATION OF THE GEOGRAPHICAL INDEX

The Geographical Index is based on the divisions of areas shown on the three charts immediately preceding the Index. These divisions are defined in "Limits of Oceans and Seas," Special Publication No. 23 of the International Hydrographic Bureau, third edition, Monaco, 1953. To define the extensive areas of the Atlantic, Indian, and Pacific Oceans more specifically, the following subdivisions have been added:

23 - *North Atlantic Ocean*

23a - Northeast Atlantic

23b - Northwest Atlantic

45 - *Indian Ocean*

45a - Northwest Indian

45b - Northeast Indian

45c - Southwest Indian

45d - Southeast Indian

SO - *Southern Oceans*

South of latitude 50° South

32 - *South Atlantic Ocean*

32a - Southeast Atlantic

32b - Southwest Atlantic

57 - *North Pacific Ocean*

57a - Northwest Pacific

57b - Northeast Pacific

61 - *South Pacific Ocean*

61a - Southwest Pacific

61b - Southeast Pacific

The catalogue numbers of ship cruises extending into any of the areas, or shore or fixed stations located in the areas, are listed under the area's number and name.

ALPHABETICAL INDEX

| SHIP OR FIXED STATION | COUNTRY | CATALOGUE NUMBER | |
|-----------------------|--------------------|------------------|----|
| - A - | | | |
| ACT 3 | UNITED KINGDOM | 138.02 | K |
| AKADEMIK KOROLEV | RUSSIAN FEDERATION | 137.06 | H |
| ALPHA HELIX | U.S.A. | 139.20 | H |
| AMERICAN STAR | UNITED KINGDOM | 138.02 | K |
| Anchieta Island | BRASIL | 204.02 | A |
| ANRO AUSTRALIA | AUSTRALIA | 102.06 | A |
| AUSTRALIAN | AUSTRALIA | 102.06 | A |
| AWAZI | JAPAN | 124.13 | B |
| - B - | | | |
| BRESLAU | GERMANY | 114.01 | U |
| BRISBANE | AUSTRALIA | 102.06 | A |
| BUSAN 206 | KOREA | 143.02 | BB |
| | | 243.01 | C |
| BUSAN 851 | KOREA | 143.02 | Z |
| | | 243.01 | C |
| BUSAN 852 | KOREA | 143.02 | T |
| | | 243.01 | C |
| BUSAN 881 | KOREA | 143.02 | CC |
| | | 243.01 | C |
| | | 243.01 | E |
| - C - | | | |
| CANTERBURY | NEW ZEALAND | 127.02 | A |
| CAPE HATTERAS | U.S.A. | 139.24 | B |
| CARIBA EXPRESS | GERMANY | 114.02 | F |
| CHARLES DARWIN | UNITED KINGDOM | 138.10 | B |
| COLUMBUS CANADA | GERMANY | 114.01 | R |
| COLUMBUS VICTORIA | GERMANY | 114.01 | R |
| COLUMBUS VIRGINIA | GERMANY | 114.01 | R |
| COLUMBUS WELLINGTON | GERMANY | 114.01 | R |
| - D - | | | |
| DARWIN | AUSTRALIA | 102.06 | A |
| DAVID STARR JORDAN | U.S.A. | 139.23 | Y |
| DERWENT | AUSTRALIA | 102.06 | A |
| DEUTSCHE BUCHT (LV) | GERMANY | 214.01 | |
| - E - | | | |
| E DATO | SPAIN | 134.01 | I |
| ELBE 1 (LV) | GERMANY | 214.01 | |
| ELLEN B. SCRIPPS | U.S.A. | 139.23 | Y |
| ENDEAVOR | U.S.A. | 139.05 | C |
| ENDEAVOUR | CANADA | 106.19 | F |
| ESAN | JAPAN | 124.13 | B |

ALPHABETICAL INDEX

| SHIP OR FIXED STATION | COUNTRY | CATALOGUE NUMBER | |
|-----------------------|----------------------------|------------------|----|
| ETIZEN | JAPAN | 124.13 | B |
| ETOMO | JAPAN | 124.13 | B |
| - F - | | | |
| FARNELLA | UNITED KINGDOM | 138.02 | K |
| FEHMARNBELT (LV) | GERMANY | 214.01 | |
| FLINDERS | AUSTRALIA | 102.06 | A |
| FORTHBANK | UNITED KINGDOM | 138.02 | K |
| FRANKLIN | AUSTRALIA | 102.06 | C |
| - G - | | | |
| GANG WON 867 | KOREA | 143.02 | X |
| GYRE | U.S.A. | 139.07 | H |
| - H - | | | |
| Haikou | PEOPLE'S REPUBLIC OF CHINA | 273.01 | |
| HAKUHO MARU | JAPAN | 124.24 | B |
| HOBART | AUSTRALIA | 102.06 | A |
| HOKUSEI MARU | JAPAN | 124.02 | C |
| HOKUSHIN MARU | JAPAN | 124.20 | E |
| HOKUYO MARU | JAPAN | 124.20 | G |
| HONG KONG STAR | UNITED KINGDOM | 138.02 | K |
| - I - | | | |
| INCHEON 866 | KOREA | 143.02 | Y |
| IRON NEW CASTLE | AUSTRALIA | 102.06 | A |
| IRON PACIFIC | AUSTRALIA | 102.06 | A |
| IVYBANK | UNITED KINGDOM | 138.02 | K |
| IWAKI MARU | JAPAN | 124.13 | B |
| - J - | | | |
| JEONBUK 868 | KOREA | 143.02 | AA |
| | | 243.01 | E |
| - K - | | | |
| KAIYO | JAPAN | 124.13 | B |
| KAKADIAMAA | GHANA | 116.01 | E |
| Kiel (LH) | GERMANY | 214.01 | |
| KINSEI MARU | JAPAN | 124.20 | C |
| KNORR | U.S.A. | 139.01 | I |
| KOFU MARU | JAPAN | 124.08 | D |
| KOSIKI | JAPAN | 124.13 | B |
| KOYO MARU | JAPAN | 124.16 | A |
| KUDARA | JAPAN | 124.13 | B |
| KUZURYU | JAPAN | 124.13 | B |

ALPHABETICAL INDEX

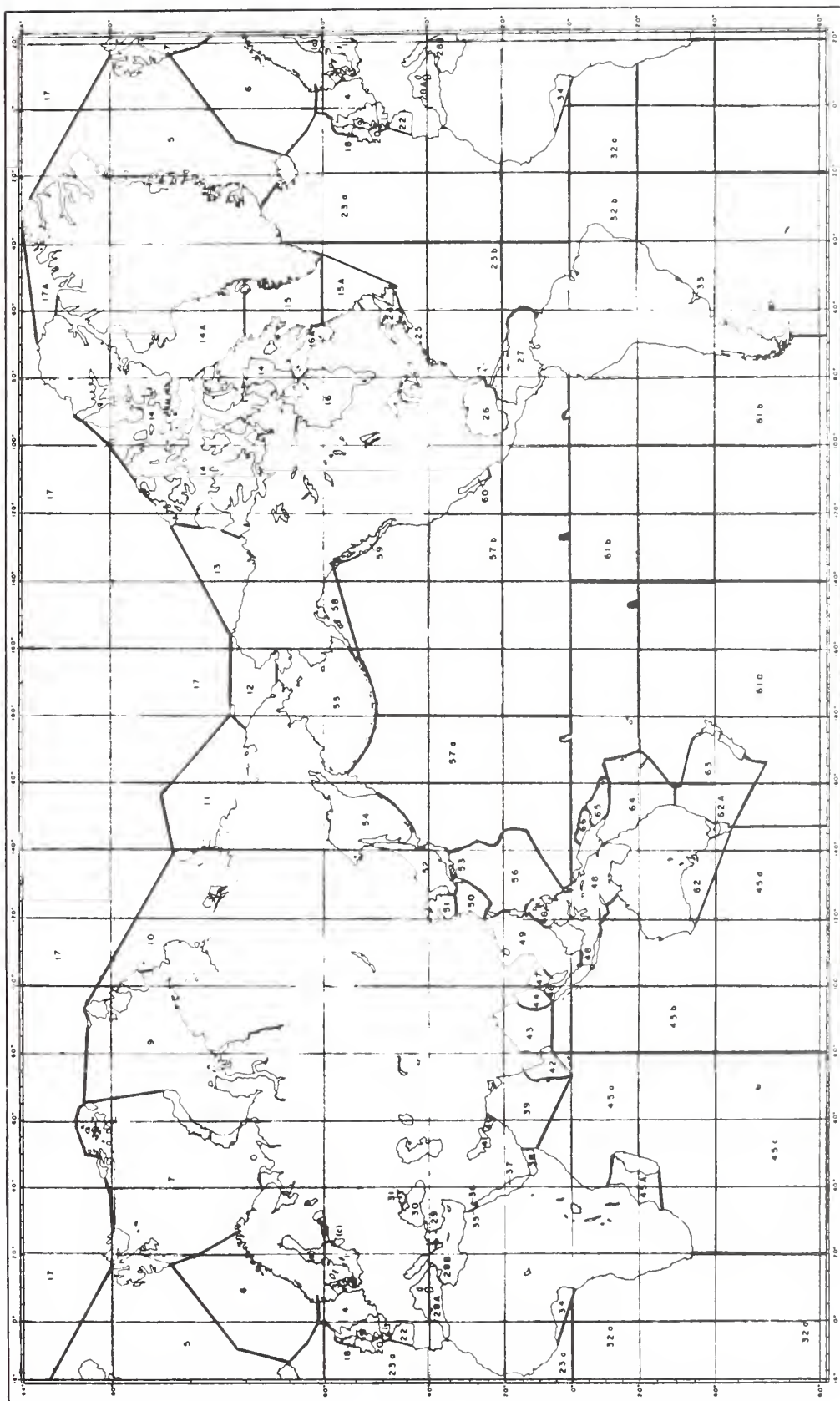
| SHIP OR FIXED STATION | COUNTRY | CATALOGUE NUMBER | |
|----------------------------|--------------------|------------------|---|
| - L - | | | |
| LE NOROIT | FRANCE | 113.07 | J |
| - M - | | | |
| MALPELO | COLOMBIA | 108.03 | C |
| MATUSIMA | JAPAN | 124.13 | B |
| MEIYO | JAPAN | 124.13 | B |
| MELBOURNE STAR | UNITED KINGDOM | 138.02 | K |
| MELVILLE | U.S.A. | 139.08 | Q |
| MILLER FREEMAN | U.S.A. | 139.23 | X |
| MOTOBU | JAPAN | 124.13 | B |
| MOTOURA | JAPAN | 124.13 | B |
| MT. MITCHELL | U.S.A. | 139.23 | Q |
| MUSSON | RUSSIAN FEDERATION | 137.06 | K |
| - N - | | | |
| Neah Bay | U.S.A. | 239.02 | |
| NEDLLOYD BAHREIN | NETHERLANDS | 126.02 | B |
| NEDLLOYD BARCELONA | NETHERLANDS | 126.02 | B |
| NEDLLOYD MADRAS | NETHERLANDS | 126.02 | B |
| NEDLLOYD MANILLA | NETHERLANDS | 126.02 | B |
| NEW HORIZON | U.S.A. | 139.08 | V |
| | | 139.23 | Y |
| Nordsee (Platform) | GERMANY | 214.01 | |
| Nordsee Boje II (Platform) | GERMANY | 214.01 | |
| NOTO | JAPAN | 124.13 | B |
| - O - | | | |
| OCA BALDA | ARGENTINA | 101.03 | A |
| OCEAN RESEARCHER 1 | TAIWAN | 112.03 | A |
| Ocean Data Buoys | JAPAN | 224.01 | A |
| OCEANUS | U.S.A. | 139.01 | L |
| OJIKI | JAPAN | 124.13 | B |
| OKI MARU | JAPAN | 124.13 | B |
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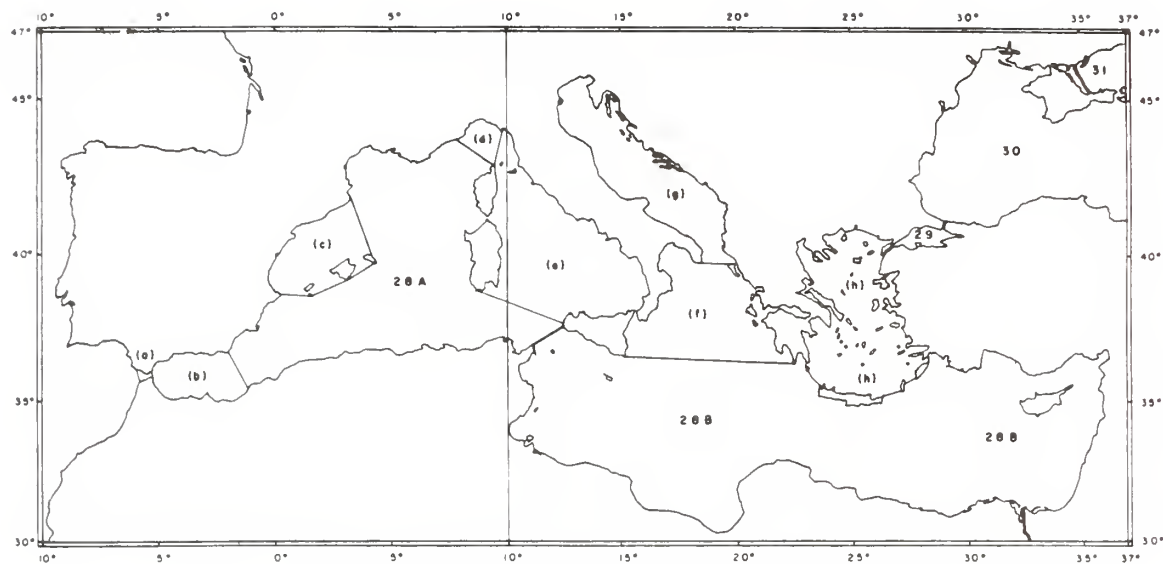
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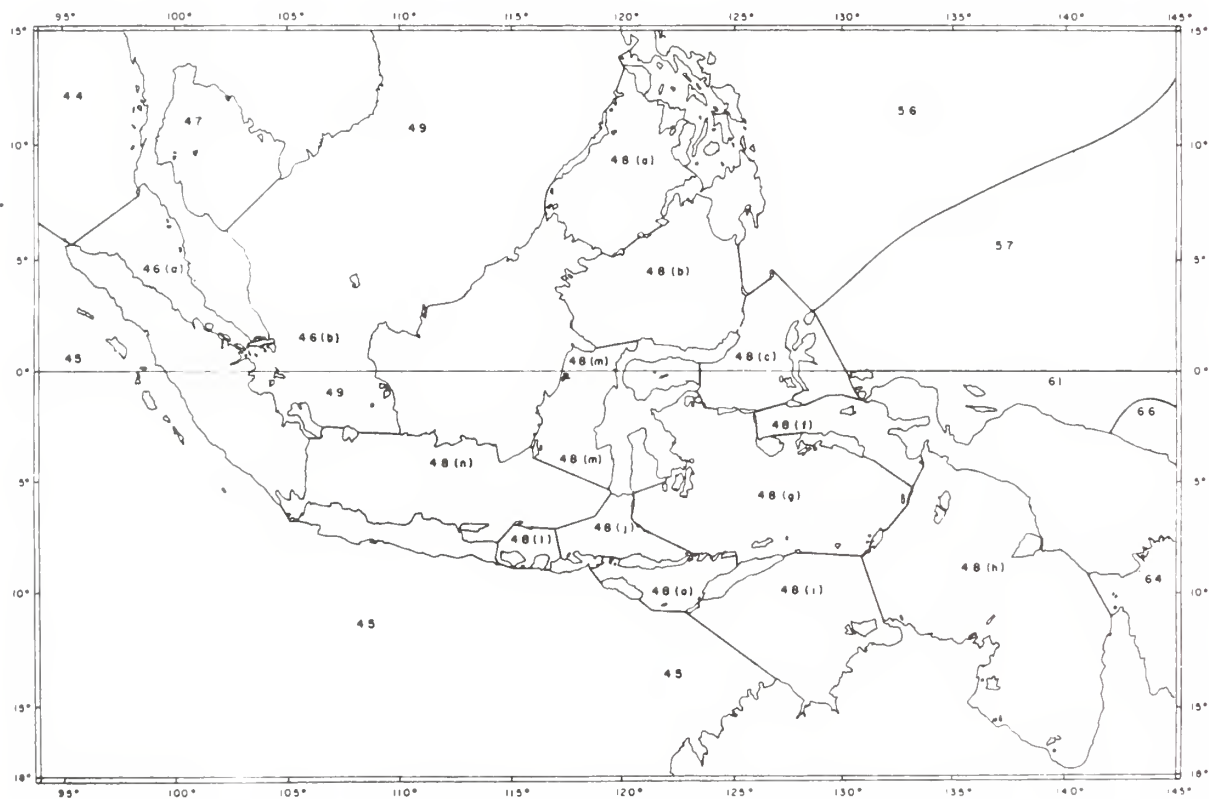
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| 4. BRAZIL | 47. MALAYSIA |
| 5. BURMA | 48. MALAGASY REPUBLIC |
| 6. CANADA | 49. MOROCCO |
| 7. CHILE | 50. SENEGAL |
| 8. COLOMBIA | 51. THAILAND |
| 9. DENMARK | 52. TURKEY |
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| 36. SOUTH AFRICA | 79. IRAQ |
| 37. RUSSIAN FEDERATION | 80. LIBERIA |
| 38. UNITED KINGDOM | 81. SINGAPORE |
| 39. UNITED STATES OF AMERICA | 82. UKRAINE |
| 40. URUGUAY | 83. REPUBLIC OF YEMEN |
| 42. YUGOSLAVIA | |
| 43. KOREA (Republic of) | |

LIST OF DATA CENTER ACRONYMS

| | |
|---------|--|
| AODC | Australian Oceanographic Data Centre |
| BODC | British Oceanographic Data Centre, United Kingdom |
| CEADO | Centro Argentino de Datos Oceanograficos |
| CECOLDO | Centro Colombiano de Datos Oceanograficos |
| CEDO | Centro Espanol de Datos Oceanograficos |
| CENADO | Centro Nacional de Datos Oceanograficos, Mexico |
| CENDOC | Centro Nacional de Datos Oceanograficos de Chile |
| CNODC | China National Oceanographic Data Center |
| CNRDO | Centro Nazionale Raccolta Dati Oceanografici, Italy |
| DOD | Deutsches Ozeanographisches Datenzentrum |
| ENODC | Egyptian National Oceanographic Data Center |
| ICES | International Council for the Exploration of the Sea |
| IHO | International Hydrographic Organization |
| INODC | Indian National Oceanographic Data Center |
| ISMARE | Irish Marine Data Centre |
| JODC | Japan Oceanographic Data Center |
| KODC | Korean Oceanographic Data Center |
| MARIS | Marine Informatie Service Stichting |
| MEDS | Marine Environmental Data Service, Canada |
| NOD | Norsk Oseanografisk Datasenter |
| NODC | National Oceanographic Data Center, U.S.A. |
| PSMSL | Permanent Service for Mean Sea Level |
| SADCO | South African Data Centre for Oceanography |
| SISMER | Systeme d'Informations Scientifiques pour la Mer |

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| 02 AUSTRALIA | Commonwealth Scientific and Industrial Research Organization..... | 102.01 | 202.01 |
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| 04 BRAZIL | Universidade de Sao Paulo, Instituto de Biociencias..... | | 204.02 |
| 06 CANADA | University of British Columbia, Institute of Oceanography..... | 106.19 | |
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| 08 COLOMBIA | Ministeria de Defensa Nacional, Armada Nacional..... | 108.03 | |
| 12 TAIWAN | Institute of Marine Geology, National Sun Yat-sen University..... | 112.03 | |
| 13 FRANCE | Museum National d'Histoire Naturelle... | 113.07 | |
| 14 GERMANY | Bundesamt fuer Seeschiffahrt und Hydrographie..... | 114.01 | 214.01 |
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PART II
CATALOGUE

EXPLANATION OF THE WDC-A, OCEANOGRAPHY DATA INFORMATION SHEET

The Change Notice lists on Data Information sheets the data which have been received by this Center. The entries are described below. Countries are arranged in the sequence shown in the numerical list of countries. Data from each country are arranged in the sequence of catalogue numbers. The 200-series data sheets follow the last 100-series data sheet in the catalogue.

Country/Catalogue Number — The series number and two digit number of the contributing country, as well as the identifying number for the data information, are given in this column. Details of the catalogue numbering system are given in the section "How to Use the Change Notice to the Catalogue of Data". The numbers corresponding to the country and institution portions of the Catalogue Number are found in the index section that lists countries and contributing institutions.

Country/Ship or Fixed Station — The country name, as well as the names of ships are printed in capital letters; lightvessels are identified by (LV) following the name. All other names not so designated are those of shore stations and other types of fixed platforms, such as lighthouses (LH) or offshore towers; names are reported as they appear with the data.

Start Date/End Date — The dates during which the data were gathered are given in the order of day/month/year. In some instances, depending on the nature of the project, the dates indicate the beginning and ending of a cruise or expedition, while in others the dates indicate the first and last observations. For shore and fixed stations months and years only are usually given.

Region — The region(s) of the World Ocean where observations were gathered. The areas listed are defined in "Limits of Oceans and Seas," International Hydrographic Bureau, Special Publication No. 23, third edition, Monaco, 1953, with certain modifications as indicated in the Catalogue Indexes section.

Oceanographic Serial Stations:

Number of Stations — The number of oceanographic serial stations (also referred to as hydrographic, hydrographical, hydrological and hydrochemical stations by various authorities) at which serial measurements of temperature, salinity, and other chemical values are made, normally to depths of five meters or greater. Data to depths less than five meters are usually catalogued as Surface Observations. The single dagger symbol (†) is used to denote data obtained by electronic, in-situ, Salinity/Temperature/Depth (STD) or Conductivity/Temperature/ Depth (CTD) sensors.

Physical and Chemical Data — The types of physical and chemical data, available at serial depths as observed and as computed values, are listed using the following symbols and abbreviations:

- T - Temperature of the water sample
- Cl - Chlorinity
- S - Salinity
- O₂ - Dissolved oxygen content
- CO₂ - Carbon dioxide
- pH - Hydrogen ion concentration
- Alk - Alkalinity
- N - Nitrogen compounds
- P - Phosphorous compounds
- Si - Silicon compounds
- sig-t - Density of the water at T & S in-situ
and at atmospheric pressure
- SVA - Anomaly of specific volume
- TherAnom - Thermosteric anomaly
- Δ D - Anomaly of dynamic heights
- PE - Potential energy
- PT - Potential temperature
- Q - Q factor for transport computations
- Vs - Speed of sound

NOTE: Chemical compounds may also be indicated by standard chemical symbols.

Sample Depths — The depth, or range of depths, to which the predominant number of samples/casts for that particular cruise were observed. They are recorded to the nearest 100 meters, except when the observations are in water less than 100 meters in depth, in which case they are usually recorded to the nearest 10 meters.

Maximum Depth — The actual depth of the deepest sample/cast for a particular cruise or data set and is not rounded off.

BT's — The type and number of mechanical bathythermograph (MBT) or expendable bathythermograph (XBT) observations are indicated by:

- MB - Analog prints of bathythermographs taken by a mechanical BT
- MTb - Tables or listings of mechanical BT temperature readings at selected depths
- XB - Analog prints of bathythermographs taken by an expendable BT

- XTb - Tables or listings of expendable BT temperature readings at selected depths
- DTb - Table or listings of digital BT temperature readings at selected depths
- STb - Tables or listings of bathythermographs reported at selected levels only, eg. 5m intervals

Currents — The types and quantity of observations of surface and subsurface currents are indicated by:

- Surf - Surface
- Subs - Subsurface

Biological — The types of marine biological observations made and the number of stations and/or abundance of data are indicated by any of the following categories:

- | | |
|---|-----------------------------|
| Phyt - Phytoplankton | Pleu - Pleuston |
| Pigm - Pigments | Sest - Seston |
| PrPr - Primary productivity | Neus - Neuston |
| Zoo - Zooplankton | Bent - Benthos |
| Nek - Nekton | PeF - Pelagic fishes |
| Eggs - Fish eggs and/or larvae | DeF - Demersal fishes |
| Micr - Microbiological data | FObs - Fishery observations |
| Biol - Bioluminescence | Bore - Borers and foulers |
| Poll - Pollution studies | Cet - Cetacea |
| C14 - Carbon | |
| Surf - Surface visual observations of birds, fishes mammals, reptiles and discolored water | |

Meteorological — The types of meteorological observations taken in conjunction with oceanographic data are indicated by:

- Wd - Wind direction and speed
- W - Weather
- Ta - Temperature of the air, dry bulb
- Tw - Temperature of the air, wet bulb
- Bar - Atmospheric pressure, barometer
- Cld - Clouds
- Vis - Visibility
- Hum - Humidity
- DP - Dew point
- Pre - Precipitation
- SoRa - Solar radiation
- Rad - Radiosonde observations

Sea Surface — The types of sea surface observations and measurements taken are listed. In addition to the abbreviations and symbols listed for Physical and Chemical Data, the following are also used:

- Col - Color of the water
- Tra - Transparency of the water
- Wa - Visual data on waves, including sea state
- IWa - Instrumented wave data
- Ice - Data on ice in the sea
- LP - Light penetration
- LPW - Long period wave records

Data Center Reference Number — Data which have been processed at a national, regional, or responsible oceanographic data center, usually have been assigned some type of identifying reference number by that center. The availability of data in automated form is indicated by the initials of the data center followed by that center's reference number. For example, machine-processed oceanographic station data for Reference Number 310863 of the National Oceanographic Data Center would appear as NODC 310863. As a means of identifying those types of data that have been machine-processed and thus correspond to the Reference Number, the Diamond symbol (◊) is entered in the appropriate columns describing data that are automated under that Reference Number.

Publication number refers to the Catalogue Number from the WDC-A, Oceanography Catalogue of Accessioned Publications Supplement identifying the published report in which the referenced data appear. The absence of a number in this column indicates that the data were not received in published form.

Remarks — Any additional information included to further describe the data. The term "(CAT. OF DATA)" or "(Change)", indicates that data for this listed cruise represent an addition to data previously received by WDC-A, Oceanography, and already described under this Catalogue Number in the Catalogue of Data (including Change Notice Nos. 1-16) or the referenced Change Notice. An asterisk (*) is placed beside each data entry which represents an addition to data catalogued previously; the total number of observations held for this cruise is shown in parentheses () beneath the data entry. Data entries preceded by a minus sign (-) and enclosed in parentheses, e.g. (-9), indicate a deletion of observations. For more extensive explanation of some cruises, the Remarks Section immediately follows the main Catalogue Section in this Change Notice.

NOTE: Track charts showing locations of oceanographic observations are not printed in the Change Notice. If a track chart is available for a particular cruise, that information will be given in the Remarks Section of this Change Notice. WDC-A will gladly provide copies of such track charts upon request.

WDC-A. OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | TYPES | | | OBSERVATIONS | | | | SEA SURFACE | DATA CENTER REFERENCE NUMBER | REMARKS |
|---------------------------------|---|---------------|-------------|---|----------------------------------|-------------------------------------|----------------------------|---------------------------|----------------------------|----------|-----------------|---------------------|------------------------------------|--|
| | | | | | OCEANOGRAPHIC NO. OF STAS. | PHYS. & CHEM. DATA | SERIAL SAMPLE DEPTHS | STATIONS MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | | |
| 101..... | ARGENTINA..... | | | | | | | | | | | | | |
| 101.01 K-01 | PUERTO DESEADO | 07/11/84 | 12/11/84 | 32b | | | | | XTB-46 * | | | Wd, Ta, Hum * | Publication 01.01-114 * | Cruise PTO. DESEADO 2/84 (Change 46) |
| 101.03 A-01 | OCA BALDA | 18/06/85 | 22/06/85 | 32b | 1 * (8) † | | | 1205 | XTB-19 * | | | Wd, Ta, Hum * | Publication 01.01-114 * | Cruise OCA BALDA 4/85 (Change 46) |
| 102..... | AUSTRALIA..... | | | | | | | | | | | | | |
| 102.01 Z-03 | SOELA | 02/09/86 | 18/09/86 | 45b | 91 † | (T, S) Ø | 20-1979 | 1979 | | | | | NODC 099119 | |
| 102.06 A-30 | ANRO AUSTRALIA, AUSTRALIAN, BRISBANE, DARWIN, DERWENT, FLINDERS, IRON NEW CASTLE, IRON PACIFIC, PERTH, STUART, SWAN, SYDNEY | 01/01/91 | 31/12/91 | 48 49 57a 57b 56 61a 64 | | | | | XTB-983 Ø | | | | NODC TOGA PACIFIC DATA BASE | |
| 102.06 A-31 | DERWENT, FLINDERS, HOBART, PERTH, SWAN | 01/01/92 | 31/12/92 | 48 49 56 57a 57b 61a 64 | | | | | XTB-412 Ø | | | | NODC TOGA PACIFIC DATA BASE | |
| 102.06 B-03 | SPRIGHTLY | 09/01/84 | 14/09/84 | 62 63 | 481 * (919) † | | | | | | | | NODC 091374, 099129 * | 443 CTD stations (Change 49) |
| 102.06 C-03 | FRANKLIN | 20/01/87 | 20/11/87 | 45b 48h 481 62 | 102 * (586) † | | | | | | | | NODC 099144, 199145 * | (Change 49) |
| 102.06 C-05 | FRANKLIN | 06/07/90 | 11/12/90 | 57a 61a 63 64 65 66 | 309 † | (T, S) Ø | 29-3743 | 3743 | | | | | NODC 099160 thru 069162 | |
| 106..... | CANADA..... | | | | | | | | | | | | | |
| 106.19 A-10 | VECTOR, R. B. YOUNG | 21/01/91 | 06/12/91 | 59 | 86 | T, S, O2 | 50-400 | 400 | | | | Ta, Tw, Wd, Cld | Publication 06.08-015 | Cruises 91/01-91/04, 91/06, 91/08, 91/11, 91/16 †† |
| 106.19 A-11 | VECTOR | 27/01/92 | 10/04/92 | 59 | 20 | T, S, O2 | 70-390 | 390 | | | | Ta, Tw, Wd, Cld | Publication 06.08-016 | Cruises 92/01, 92/03 |
| 106.19 F-08 | ENDEAVOUR | 02/03/92 | 04/03/92 | 59 | 18 | T, S, O2 | 40-250 | 250 | | | | Ta, Tw, Wd, Cld | Publication 06.08-016 | Cruise 92/02 |
| 106.22 O-04 | Aircraft | 23/04/91 | 11/05/91 | 13 | 90 † | T, S, O2, SiO3, PO4, NiO3, PE | 5-57 | 57 | | | Pigm-9 | (T, S, Ice) -13 | | |

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† DENOTES DATA OBTAINED BY ELECTRONIC, IN-SITU, CONDUCTIVITY/SALINITY/TEMPERATURE/DEPTH (CTD/STD) SENSORS.

Ø INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.

†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A, OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | TYPES OF STATIONS | | | OBSERVATIONS | | | | | DATA CENTER REFERENCE NUMBER | REMARKS |
|---------------------------------|--|---------------|-------------|--------------------------------------|-------------------|--|------------------|---------------|----------------------------|----------|-----------------|----------------------|------------------------------------|--|
| | | | | | NO. OF STAS. | PHYS. & CHEM. DATA | SAMPLE DEPTHS | MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | SEA SURFACE | |
| 108..... | COLOMBIA | | | | | | | | | | | | | |
| 108.03 B-01 | ARC. PROVIDENCIA | 09/06/83 | 29/06/83 | 27 | 73 | T, S, sig-t, sva, AD, Vs, O2, PO4, NO2, NO3, SiO4, NH4, pH | 10-1532 | 1794 | | | | Wd, Ta, Bar | Tra | Publication 08.07-009 Cruise OCEANO VI |
| 108.03 C-01 | ARC. MALIPELO | 04/10/83 | 26/10/83 | 27 | 35 | T, S, sig-t, sva, AD, Vs, O2, PO4, NO2, NO3, SiO4, NH4, pH | 200-966 | 1932 | | | | Wd, Ta, Tw, Cld, Bar | Wa, Col, Tra | Publication 08.07-010 Cruise OCEANO VII |
| 112..... | TAIWAN | | | | | | | | | | | | | |
| 112.03 A-01 | OCEAN RESEARCHER 1 | 07/05/92 | 11/05/92 | 49 56 | 16 † | T, S, CO2, pH | 500-2000 | 2006 | | | | Wd, Ta | | Publication 12.03-001 Cruise 316 |
| 113..... | FRANCE..... | | | | | | | | | | | | | |
| 113.07 J-07 | LE MOROIT, RABELAIS, RACINE, RIMBAUD, RONSARD | 01/01/91 | 31/12/91 | 57a 57b 61a 61b 64 65 | | | | | XTB-432 Ø | | | | | NODC TOGA PACIFIC DATA BASE |
| 114..... | GERMANY..... | | | | | | | | | | | | | |
| 114.01 R-09 | COLUMBUS CANADA, COLUMBUS VICTORIA, COLUMBUS VIRGINIA, COLUMBUS WELLINGTON | 01/01/91 | 31/12/91 | 57b 61a | | | | | XTB-540 Ø | | | | | NODC TOGA PACIFIC DATA BASE |
| 114.01 R-10 | COLUMBUS VICTORIA, COLUMBUS VIRGINIA, COLUMBUS WELLINGTON | 01/01/92 | 31/12/92 | 57b 61a | | | | | XTB-293 Ø | | | | | NODC TOGA PACIFIC DATA BASE |
| 114.01 U-01 | BRESLAU | 22/09/85 | 03/10/85 | 23a 23b | | | | | XTB-53 Ø | | | | | NODC (SBT) 046101 Ship of Opportunity Programme |
| 114.01 U-02 | BRESLAU | 31/12/85 | 04/12/86 | 23a 23b | | | | | XTB-142 Ø | | | | | NODC (SBT) 046102, 046103 Ship of Opportunity Programme |
| 114.02 F-02 | SIERRA EXPRESS, PORT HARCOURT, CARIBA EXPRESS | 04/01/85 | 06/12/85 | 23a 23b | | | | | XTB-833 Ø | | | | | NODC (SBT) 046136-046139 046124-046128 046108-046116 |
| 114.02 F-03 | PORT HARCOURT, CARIBA EXPRESS | 04/01/86 | 04/12/86 | 23a 23b | | | | | XTB-363 Ø | | | | | NODC (SBT) 046129-046130 046117-046122 |
| 116..... | GUANA..... | | | | | | | | | | | | | |
| 116.01 E-12 | KAKADINDA | 06/02/90 | 18/12/90 | 34 | 89 | (T, S, O2) Ø | 300-100 | 100 | | | | (Wd, W, Cld, Bar) Ø | (Wa, Col, Tra) Ø | NODC GH1002 |

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Ø INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.
†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A, OCEANOGRAPHY DATA INFORMATION

| | | | | | TYPES | | OF | | OBSERVATIONS | | | | | | |
|---------------------------------|---|---------------|-------------|---|---------------------------------|--|----------------------------|---------------------------|----------------------------|--------------------|----------------------|----------------------------|-----------------------|---|---------------------------------------|
| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | OCEANOGRAPHIC NO OF STAS. | PHYS. & CHEM. DATA | SERIAL SAMPLE DEPTHS | STATIONS MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | SEA SURFACE | DATA CENTER REFERENCE NUMBER | REMARKS |
| 116.01 E-13 | KAKADIANGA | 03/01/91 | 17/12/91 | 34 | 68 | (T, S, O2) ø | 30-100 | 100 | | | | (Wd, W, Cld, Bar) ø | (Wa Col, Tra) ø | NODC GH1003 | |
| 120..... | INDONESIA | | | | | | | | | | | | | | |
| 120.01 A-36 | SAMUDERA | 14/08/84 | 25/08/84 | 48f 48g 48h | 21 † | T, S, sig-t, O2, PO4, NO3, SiO3 | 22-392 | 392 | | | Zoo-21 Pigm-20 | Wd, Ta, Tw, Cld, Bar | Wa, Tra | Publication 20.02-028 | SNELLIUS II Expedition |
| 120.01 A-37 | SAMUDERA | 15/02/85 | 27/02/85 | 48f 48g 48h | 23 † | T, S, sig-t, O2, PO4, NO3, SiO3 | 15-390 | 397 | | | Zoo-23 Pigm-23 | Wd, Ta, Tw, Cld, Bar | Wa, Tra | Publication 20.02-028 | SNELLIUS II Expedition |
| 124..... | JAPAN..... | | | | | | | | | | | | | | |
| 124.02 B-63 | OSHORO MARU | 31/10/91 | 02/09/92 | 12 45b 50 51 52 55 57a 57b 58 | 220 † | T, S, sig-t, TherAnom, SVA, ΔO, PO4, NO2, NO3, Si | 40-3000 | 3000 | | | Phyt-187 FObs-187 | Wd, W, Ta, Tw, Bar | T Wa, Col, Tra | Publication 24.04-049 | Cruises 41, 42, 43, 44, 45 |
| 124.02 C-16 | HOKUSEI MARU | 22/01/92 | 23/10/92 | 52 57a 57b | 173 † | T, S, sig-t, TherAnom, SVA, ΔO | 20-1500 | 1500 | | | Phyt-73 FObs-84 | Wd, W, Ta, Tw, Bar | T Wa, Col, Tra | Publication 24.04-049 | Cruises 53, 54, 55, 56 |
| 124.04 A-14 | UMITAKA MARU | 14/11/90 | 20/03/91 | 23a 23b 57a 57b | | | | | XTD-247 | | | Ta, Tw, Wd, Bar | | Publication 24.12-056 | Cruise 49 |
| 124.04 B-05 | SHINYO MARU | 12/02/91 | 21/02/91 | 43 | 8 † | T, S, O2 | 500-1100 | 1100 | XTD-43 | | FObs-7 | Ta, Tw, Wd, Bar | | Publication 24.12-056 | Cruise 19 |
| 124.04 D-02 | SEIYO MARU | 20/07/90 | 22/07/90 | 56 | 40 † | T, S, O2 | 75-100 | 101 | | | | | | Publication 24.12-056 | Cruise 11 |
| 124.08 D-80 | KOFU MARU | 06/10/92 | 17/10/92 | 52 | 22 † | T, S | 200-2500 | 2500 | XTD-16 | Subs-46 | | | | Publication 24.25-021 | Cruise 92-10 |
| 124.11 D-72 | SEIFU MARU | 05/02/92 | 28/10/92 | 52 | 150 † | T, S | 50-1200 | 1200 | XTB-60 | Surf-8 Subs-249 | | | S | Publication 24.27-018 24.25-019 24.25-020 24.25-021 | Cruises 92-02, 92-05, 92-07, 92-10 |
| 124.13 B-26 | KAIYO, AWAZI, ESAN, ETOMO, ETIZEN, IWAKI MARU, KAIYO, KOSIKI, KIDARA, KUZURYU, MATUSIMA, MEIYO, MOTOBU, NOTO, OJIKI, OKI MARU, SATUNA, TYOKAI, YAHIKO, YUBARI | 13/01/89 | 11/12/89 | 50 52 54 56 57a | | | | | XTB-903 | Surf-GEK -1,041 | | Ta | Wa | Publication 24.10-055 | |

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ø INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.
†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A. OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | TYPES OF STATIONS | | | | OBSERVATIONS | | | | SEA SURFACE | DATA CENTER REFERENCE NUMBER | REMARKS |
|---------------------------------|--|---------------|-------------|-----------------------------|-------------------|---|------------------|---------------|----------------------------|----------------------|--------------------|------------------------------------|-------------------------|------------------------------------|---------------------|
| | | | | | NO OF STAS. | PHYS. & CHEM. DATA | SAMPLE DEPTHS | MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | | | |
| 124.13 B-27 | KAIYO, ESAN, ETIZEN IWAKI MARU, KAIYO, KOSIKI, KUDARA, KUZURU, MATSUSIMA, MEIYO, MOTOURA, NOTO, SAGAMI MARU, SINANO, SORATI, TESIO, TYOKAI | 12/01/90 | 16/12/90 | 50 52 54 56 57a | | | | | | Surf-GEK -1,006 | | Ta | Wa | Publication 24.10-056 | |
| 124.13 E-70 | TAKUYO | 07/02/90 | 12/03/90 | 56 57a 61a | 81 † | T, S, OZ, P, Si, pH, Heavy Metal Hydrocarbon | 100-4500 | 4515 | XTB-123 | Surf- 1,453 †† | | Wd, W, Ta, Tw, Cld, Bar, Vis | Wa | Publication 24.10-057 | WESTPAC, 7th Cruise |
| 124.13 E-71 | TAKUYO | 08/02/91 | 13/03/91 | 56 57a | 51 † | T, S, OZ, P, Si, pH | 75-4400 | 4439 | XTB-126 | Surf-953 †† | | Wd, W, Ta, Tw, Cld, Bar, Vis | Wa | Publication 24.10-058 | WESTPAC, 8th Cruise |
| 124.13 J-03 | TENYO MARU | 17/10/90 | 13/11/90 | 52 54 57a | 37 † | T, S | 30-4500 | 4500 | XTB-95 | | | Wd, W, Ta, Tw, Cld, Bar | Wa | Publication 24.10-056 | |
| 124.13 GGG-21 | SHOYO | 08/03/89 | 04/12/89 | 50 54 56 57a | 274 † | T, S, OZ, P, Si, pH | 30-4500 | 4500 | XTB-349 | | | Wd, W, Ta, Tw, Cld, Bar, Vis | Wa | Publication 24.10-055 | |
| 124.13 GGG-22 | SHOYO | 12/04/90 | 16/12/90 | 50 54 56 57a | 343 † | T, S, OZ, P, Si, pH | 30-4500 | 4500 | XTB-359 | | | Wd, W, Ta, Tw, Cld, Bar, Vis | Wa | Publication 24.10-056 | |
| 124.16 A-33 | KOYO MARU | 01/11/91 | 28/02/92 | 56 57a 57b 61a | 115 † | T, S | 200-1000 | 1000 | XTB-29 | | FObs-5 | Wd, W, Ta, Bar | T, S Wa, Col, Tra | Publication 24.11-055 | |
| 124.16 B-13 | TENYO MARU | 30/04/91 | 25/07/91 | 50 57a 61a | 16 † | T, S | 200-1000 | 1000 | XTB-11 | | FObs-6 | Wd, W, Ta, Bar | T, S Wa, Col Tra | Publication 24.11-055 | |
| 124.20 B-04 | OYASHIO MARU | 07/04/87 | 15/03/88 | 52 57a | 257 † | T, S | 50-300 | 300 | | | | Wd, W, Ta, Bar | Col | Publication 24.06-067 | |
| 124.20 B-05 | OYASHIO MARU | 14/04/88 | 17/03/89 | 52 57a | 309 † | T, S | 30-500 | 500 | | | | Wd, W, Ta, Bar | Col, Tra | Publication 24.06-068 | 204 CTD stations |
| 124.20 C-04 | KINSEI MARU | 09/04/87 | 05/03/88 | 52 | 290 † | T, S, OZ, PO4, NO2, NO3 | 10-300 | 300 | | | Phyt-66 Pigm-34 | Wd, W, Ta, Bar | Col, Tra | Publication 24.06-067 | |
| 124.20 C-05 | KINSEI MARU | 13/04/88 | 02/03/89 | 52 57a | 253 † | T, S, OZ, PO4, NO2, NO3, NH4, Si | 30-800 | 800 | | | Phyt-42 Pigm-12 | Wd, W, Ta, Bar | Tra | Publication 24.06-068 | |
| 124.20 D-03 | SEITOKU MARU No. 21 | 30/05/87 | 29/09/87 | 57a | | | | | MTD-44 | | | W, Ta, Bar | | Publication 24.06-067 | |
| 124.20 E-04 | HOKUSHIN MARU | 13/04/87 | 25/02/88 | 57a | 82 † | T, S | 50-600 | 600 | MTB-177 | | | Wd, W, Ta, Bar | S Tra | Publication 24.06-067 | |

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†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A, OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REQ. | TYPES OF | | | | OBSERVATIONS | | | | | METEORO- LOGICAL | SEA SURFACE | DATA CENTER REFERENCE NUMBER | REMARKS |
|---------------------------------|------|--|---------------|-------------|-------------------------------|----------------------------------|--|----------------------------|---------------|----------------------------|----------|------------------------------|--------------------------------|---|-------------------------------|-----------------------------------|---|---------|
| | | | | | | OCEANOGRAPHIC NO. OF STAS. | PHYS. & CHEM. DATA | SERIAL SAMPLE DEPTHS | MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | | | | | | |
| 124.20 | E-05 | HOKUSHIN MARU | 11/04/88 | 23/03/89 | 57a | | | | | MTD-290 | | | Wd, W, Ta, Bar | S | Publication 24.06-068 | | | |
| 124.20 | G-04 | HOKUYO MARU | 07/04/87 | 25/02/88 | 52 54 | 623 † | T, S | 20-500 | 500 | | | | Wd, W, Ta, Bar | Tra | Publication 24.06-067 | | | |
| 124.20 | G-05 | HOKUYO MARU | 11/04/88 | 22/02/89 | 52 54 | 408 † | T, S | 20-500 | 500 | | | | Wd, W, Ta, Bar | Tra | Publication 24.06-068 | | | |
| 124.24 | B-54 | HAKUHO MARU | 17/01/91 | 22/01/91 | 56 57a | 22 † | T, S | 1000 | 1036 | | | | Wd, W, Ta, DP, Bar, Vis | T | Publication 24.13-076 | | Cruise KH-91-1, Legs 1 & 2 | |
| 124.24 | B-55 | HAKUHO MARU | 04/11/91 | 24/11/91 | 57a | 14 † | T, S, O2, PO4, SiO4, SiO2, PT | 1100-1800 5500-6700 | 7275 | | | Zoo-13 Pigm-5 FObs-26 | Wd, Ta, DP, Bar, Hum | T | Publication 24.13-077 | | Cruise KH-91-6 | |
| 124.24 | B-56 | HAKUHO MARU | 29/10/92 | 06/12/92 | 56 57a 61a 64 65 | | | | | | | | | | | | Cruise KH-92-5, TOGA/COARE | |
| 124.31 | A-02 | Shore-Based Party | 16/02/83 | 11/01/84 | 45c SO | 73 † | T, S, sig-t, O2 | 32-1003 | 1005 | XTD-16 | | Zoo-66 * | | | Publication 24.22-037 * | | Cruise JARE-24, BIOWASS (Change 47) | |
| 124.31 | A-03 | Shore-Based Party | 18/02/84 | 06/01/85 | 45c SO | | | | | | | Zoo-52 * | | | Publication 24.22-038 * | | JARE-25, BIOWASS (Change 41) | |
| 124.31 | A-04 | Shore-Based Party | 03/04/90 | 14/01/91 | 45c SO | 11 † | T, S, sig-t, AD, O2, PO4, NO2, NO3, NH4, SiO3, pH Hydrocarbon Heavy Metal | 733-3400 | 3419 | XTD-202 | | | Wd, W, Ta, Bar, Vis, Hum | T, S, O2, PO4, NO2, NO3, NH4, SiO3, pH Wa | Publication 24.22-039 | | JARE-31 | |
| 124.31 | B-08 | SHIRASE | 14/11/90 | 19/03/91 | 45b 45d 61a 63 SO | | | | | | | | | | Publication 24.22-040 | | 5 CTD stations | |
| 126.02 | B-07 | NEDLLOYD BAHREIN, NEDLLOYD BARCELONA, NEDLLOYD MADRAS, NEDLLOYD MANILLA | 01/01/91 | 31/12/91 | 57b 61a | | | | | XTD-259 0 | | | | | | NODC TOGA PACIFIC DATA BASE | | |
| 126.02 | B-08 | NEDLLOYD MADRAS, NEDLLOYD MANILLA | 01/01/92 | 31/12/92 | 57b 61a | | | | | XTD-178 0 | | | | | | NODC TOGA PACIFIC DATA BASE | | |
| 126.05 | A-01 | TYRO | 01/08/84 | 13/08/84 | 48f 48g 48h | 35 † | T, S, O2, PO4, NO2, NO3, Si, pH | 299-303 | 305 | | | Phyt-29 Zoo-44 PrPr-24 | Wd | Tra | Publication 20.02-028 | | | |
| 126.05 | A-02 | TYRO | 09/02/85 | 21/02/85 | 48f 48g 48h | 36 † | T, S, O2, PO4, NO2, NO3, Si, pH | 296-304 | 304 | | | Phyt-30 Zoo-47 | Wd | Tra | Publication 20.02-028 | | SNELLIUS II Expedition | |

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WDC-A, OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | TYPES OF OBSERVATIONS | | | | | BIO- LOGICAL | METEORO- LOGICAL | SEA SURFACE | DATA CENTER REFERENCE NUMBER | REMARKS |
|---------------------------------|--|---------------|-------------|---|---------------------------------|-----------------------|----------------------------|---------------|----------------------------|-----------------|---------------------|----------------|--|--------------------------|
| | | | | | OCEANOGRAPHIC NO OF STAS. | PHYS. & CHEM. DATA | SERIAL SAMPLE DEPTHS | MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | | | | |
| 127.02 A-06 | NEW ZEALAND..... CANTERBURY, SOUTHLAND, WELLINGTON | 01/01/91 | 31/12/91 | 288 37 39 45b 48 49 61a 62 63 64 | | | | | XTB-288 Ø | | | | NODC (BT) 080008, 080029 080047, 080402 080418, 080423 NODC TOGA PACIFIC DATA BASE | |
| 127.02 A-07 | CANTERBURY, WAIKATO | 01/01/92 | 31/12/92 | 61a 64 | | | | | XTB-149 Ø | | | | NODC (BT) 080403, 080422 NODC TOGA PACIFIC DATA BASE | |
| 134..... | SPAIN | | | | | | | | | | | | ICES | |
| 134.01 B-03 | XAUEN | 14/09/29 | 13/12/29 | 23a 28Ae | 19 | T, S | 75-450 | 800 | | | | | ICES | |
| 134.01 B-04 | XAUEN | 26/02/30 | 14/09/30 | 22 23a 28Ab | 73 | T, S | 50-500 | 700 | | | | (T, S) - 13 | ICES | |
| 134.01 G-01 | VICTORIA | 01/02/25 | 21/11/25 | 22 23a | 58 | T, S | 50-500 | 535 | | | | | ICES | |
| 134.01 H-01 | PROSERPINA | 12/05/26 | 21/08/26 | 22 23a | 31 | T, S | 50-500 | 500 | | | | | ICES | |
| 134.01 I-01 | E DATO | 23/02/28 | 14/06/28 | 22 23a | 51 | T, S | 50-500 | 500 | | | | | ICES | |
| 137..... | RUSSIAN FEDERATION.... | | | | | | | | | | | | | |
| 137.02 E-19 | VIKTOR BUGAEV | 22/11/84 | 01/03/85 | 23a 23b 28A 28Ab 28Ae 28B | 2 * (254) | | | | | | | | NODC 907149, 907351 * | Cruise 38 (Change 42) |
| 137.06 H-18 | AKADEMIK KOROLEV | 06/02/90 | 02/04/90 | 23a | 87 | (T, S) Ø | 500-2200 | 2200 | | | | | NODC 907370 | Cruise 50 |
| 137.06 K-36 | MUSON | 15/11/84 | 15/11/84 | 23a | 2 | (T, S) Ø | 270, 1980 | 1980 | | | | | NODC 907350 | Cruise 46 |
| 138..... | UNITED KINGDOM..... | | | | | | | | | | | | | |
| 138.02 A-01 | OWEN | 01/11/57 | 22/12/57 | 28A 28B 37 38 | | | | | MTB-84 Ø * | | | | NODC (BT) 002532 * | (Original Catalogue) |
| 138.02 A-07 | OWEN | 26/09/57 | 28/09/57 | 23a | | | | | MTB-12 Ø | | | | NODC (BT) 024684 | |

* DATA FOR THIS CRUISE REPRESENT AN ADDITION TO DATA PREVIOUSLY RECEIVED BY WDC-A, OCEANOGRAPHY.

† DENOTES DATA OBTAINED BY ELECTRONIC, IN-SITU, CONDUCTIVITY/SALINITY/TEMPERATURE/DEPTH (CTD/STD) SENSORS.

Ø INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.

†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A, OCEANOGRAPHY DATA INFORMATION

| TYPES | | | | | OBSERVATIONS | | | | | OF | | | REMARKS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REQ. | OCEANOGRAPHIC NO. OF STAS. | PHYS. & CHEM. DATA | SERIAL SAMPLE DEPTHS | STATIONS MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | SEA SURFACE | DATA CENTER REFERENCE NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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* DATA FOR THIS CRUISE REPRESENT AN ADDITION TO DATA PREVIOUSLY RECEIVED BY WDC-A, OCEANOGRAPHY.

† DENOTES DATA OBTAINED BY ELECTRONIC, IN-SITU, CONDUCTIVITY/SALINITY/TEMPERATURE/DEPTH (CTD/STD) SENSORS.

Ø INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.

†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A, OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | TYPES | | | OBSERVATIONS | | | | | DATA CENTER REFERENCE NUMBER | REMARKS |
|---------------------------------|--------------------------------------|---------------|-------------|-------------------|---------------------|--|------------------|----------------------------|----------|------------------------------|----------------------------------|-------------------|--|---|
| | | | | | OCEANOGRAPHIC | SERIAL | STATIONS | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | SEA SURFACE | | |
| 139.07 H-05 | GYRE | 01/10/90 | 15/10/90 | 26 | NO. OF STATS. | PHYS. & CHEM. DATA | SAMPLE DEPTHS | MAX. DEPTH | | | | | NODC 329632 | 24 CTD stations |
| 139.07 H-10 | GYRE | 15/06/91 | 18/06/91 | 26 | 24 † (31) * | | 40-1200 | 2400 | | | | | NODC 329648 | Cruise CO4 13 CTD stations (Change 50) |
| 139.07 H-11 | GYRE | 21/06/92 | 31/10/92 | 26 | 13 † (24) * | | | 1500 | | | | | NODC 329841, 329876, 329877 329878 | |
| 139.07 H-12 | GYRE | 11/07/90 | 23/07/90 | 26 | 59 † | (T, S) Ø | 10-1400 | 1100 | | | | | NODC 329625 | Cruise 90-G10 |
| 139.08 Q-15 | MELVILLE | 09/11/88 | 06/03/89 | 32a 32b SO | 138 † (355) * | | 6-90 | | | | (Wd, Ta, Tw, Cld, Bar) Ø * | S-4 Ø * Wa Ø * | NODC 310069, 310070 * | Cruise SAVE, Legs 4 & 5/HXDROS Legs 2 & 3 138 CTD stations (Change 49) |
| 139.08 Q-18 | MELVILLE | 14/03/89 | 12/04/89 | 23a 32b | 71 † (157) * | | | | | | (Wd, Ta, Bar) Ø * | | NODC 310071 | Cruise SAVE leg 6/HXDROS leg 4 71 CTD stations (Change 50) |
| 139.08 V-18 | NEW HORIZON | 26/09/92 | 12/10/92 | 57b | 76 † | T, S, sig-t, SVA, AD, O2, PO4, NO2, NO3, SiO3, PT | 31-535 | 572 | | Zoo-64 Plgm-76 PrPr-12 | Wd, W, Ta, Tw, Cld, Bar | Wa, Col, Tra | Publication 39.01-333 | CalCOFI Cruise 9210 12 CTD stations |
| 139.08 V-19 | NEW HORIZON | 19/08/89 | 01/09/89 | 57b | 85 † | (T, S) Ø | | | | | | | NODC 329880 | |
| 139.09 C-13 | ROBERT D. CONRAD | 01/10/79 | 22/10/79 | 23a 23b 32b | 72 † | (T, S) Ø | | | | | | | NODC 319899 | |
| 139.20 H-02 | ALPHA HELIX | 24/07/91 | 14/11/91 | 57b 58 | 116 † | (T, S) Ø | | | | | | | NODC 310043 thru 310047 | Cruises HX159, HX160, L09 thru L011 †† |
| 139.20 H-03 | ALPHA HELIX | 11/11/80 | 21/11/80 | 57b 58 | 206 † | (T, S) Ø | | | | | | | NODC 319271 | |
| 139.20 H-04 | ALPHA HELIX | 19/06/82 | 04/07/82 | 55 | 111 † | (T, S) Ø | | | | | | | NODC 319249 | |
| 139.20 H-05 | ALPHA HELIX | 01/04/83 | 29/10/83 | 58 | 596 † | (T, S) Ø | | | | | | | NODC 319331, 319334, 319335 319337 | |
| 139.20 H-06 | ALPHA HELIX | 07/05/84 | 03/11/84 | 55 58 | 627 † | (T, S) Ø | | | | | | | NODC 319400, 319401, 319419 319421, 319426 | |
| 139.20 H-07 | ALPHA HELIX | 13/07/85 | 22/08/85 | 55 | 287 † | (T, S) Ø | | | | | | | NODC 319548, 319602 | |
| 139.20 H-08 | ALPHA HELIX | 12/07/86 | 08/09/86 | 55 | 336 † | (T, S) Ø | | | | | | | NODC 319672, 319687, 319690 | |
| 139.20 H-09 | ALPHA HELIX | 13/05/87 | 26/05/87 | 57b 58 | 144 † | (T, S) Ø | | | | | | | NODC 319717 | |

* DATA FOR THIS CRUISE REPRESENT AN ADDITION TO DATA PREVIOUSLY RECEIVED BY WDC-A, OCEANOGRAPHY.

† DENOTES DATA OBTAINED BY ELECTRONIC, IN-SITU, CONDUCTIVITY/SALINITY/TEMPERATURE/DEPTH (CTD/STD) SENSORS.

Ø INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.

†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A, OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | TYPES OF | | | | OBSERVATIONS | | | | SEA SURFACE | DATA CENTER REFERENCE NUMBER | REMARKS |
|---------------------------------|--------------------------------------|---------------|-------------|--|---------------------|-----------------------|----------------------------|---------------------------|----------------------------|----------|-----------------|---------------------|----------------|-------------------------------------|--|
| | | | | | NO. OF STAS. | PHYS. & CHEM. DATA | SERIAL SAMPLE DEPTHS | STATIONS MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | | | |
| 139.20 | H-10 | 16/06/88 | 29/06/88 | 57b 58 | 132 † | (T, S) ∅ | | | | | | | | NODC 319906 | |
| 139.20 | H-11 | 09/07/89 | 30/07/89 | 55 | 186 † | (T, S) ∅ | | | | | | | | NODC 319875 | |
| 139.23 | J-11 | 13/09/88 | 16/09/88 | 57b | 9 † | (T, S) ∅ | | | | | | | | NODC 319991 | |
| 139.23 | J-12 | 12/09/89 | 15/09/89 | 57b | 23 † | (T, S) ∅ | | | | | | | | NODC 319992 | |
| 139.23 | J-13 | 02/10/90 | 20/10/90 | 12 55 | 153 † | (T, S) ∅ | | | | | | | | NODC 310048 | Cruise ICE 90 |
| 139.23 | O-11 | 01/01/91 | 31/12/91 | 56 57a 57b 61a 61b 64 65 66 | | | | | XTB- 2,492 ∅ | | | | | NODC TOGA PACIFIC DATA BASE | |
| 139.23 | O-12 | 01/01/92 | 31/12/92 | 56 57a 57b 61a 61b 64 65 66 | | | | | XTB- 1,020 ∅ | | | | | NODC TOGA PACIFIC DATA BASE | |
| 139.23 | Q-09 | 17/04/90 | 29/09/90 | 23b 26 | 16 † | (T, S) ∅ | 1000-2500 | 2565 | | | | | | NODC 310001 | |
| 139.23 | X-20 | 02/04/91 | 05/10/91 | 55 57a 57b 58 | 287 † | (T, S) ∅ | 40-1500, 3000-4000 | 4329 | | | | | | NODC 310060 thru 310062 | Cruise FOCI |
| 139.23 | X-21 | 06/04/90 | 11/10/90 | 55 57b 58 | 4444 † ∅ | T, S | | | | | | | | NODC 310022 THRU 310027 | Cruise OCSEAP, FOCI |
| 139.23 | Y-02 | 06/01/78 | 26/04/78 | 57b | 180 † (430) * | | | | | | | | | NODC 319810, 319811, 319812 * | CalCOFI Cruises 7801, 7803, 7804 180 CTD stations (Change 33) |
| 139.23 | Y-03 | 05/01/84 | 24/01/84 | 57b | 40 † (119) * | | 30-1000 | 1000 | | | | | | NODC 318633, 319828 * | CalCOFI Cruise 8401 40 CTD stations (Change 35) |
| 139.23 | Y-04 | 09/02/84 | 25/03/84 | 57b | 83 † (185) * | | 20-1000 | 1000 | | | | | | NODC 318634, 319829 * | CalCOFI Cruise 8402-3 83 CTD stations (Change 35) |
| 139.23 | Y-05 | 10/04/84 | 02/06/84 | 57b | 24 † (157) * | | | | | | | | | NODC 318627, 318635, 319830 * | 24 CTD stations (Change 35) |
| 139.23 | Y-06 | 11/07/84 | 28/07/84 | 57b | 36 † (115) * | | 30-1000 | 1000 | | | | | | NODC 318631, 319831 * | CalCOFI Cruise 8407 36 CTD stations (Change 36) |

* DATA FOR THIS CRUISE REPRESENT AN ADDITION TO DATA PREVIOUSLY RECEIVED BY WDC-A, OCEANOGRAPHY.
† DENOTES DATA OBTAINED BY ELECTRONIC, IN-SITU, CONDUCTIVITY/SALINITY/TEMPERATURE/DEPTH (CTD/STD) SENSORS.
∅ INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.
†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A. OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OFFICED STATION | START DATE | END DATE | IHB REG. | OCEANOGRAPHIC SERIAL STATIONS | | | | OBSERVATIONS | | | | DATA CENTER REFERENCE NUMBER | REMARKS |
|---------------------------------|---|---------------|-------------|----------------|-------------------------------|--|------------------|---------------|----------------------------|----------|------------------------------|-------------------------------|---|---|
| | | | | | NO. OF STAS. | PHYS. & CHEM. DATA | SAMPLE DEPTHS | MAX. DEPTH | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | SEA SURFACE | |
| 139.23 Y-07 | DAVID STARR JORDAN | 02/10/84 | 23/10/84 | 57b | 41 † (112) | | 40-1000 | 1000 | | | | | NODC 318632, 319832 * | CalCOFI Cruise 8410 41 CTD stations (Change 36) |
| 139.23 Y-11 | TOWNSEND CROMWELL, ELLEN B. SCRIPPS, WECOMA, DAVID STARR JORDAN, NEW HORIZON | 23/01/83 | 08/12/83 | 57b | 98 † (251) | | | | | | | | NODC 319824 | CalCOFI Cruises 8301 thru 8312 †† 162 CTD stations (Change 38) |
| 139.23 Y-14 | DAVID STARR JORDAN | 12/05/78 | 26/08/78 | 57b | 200 † (488) | | | | | | | | NODC 319813 | CalCOFI Cruises 7805, 7807, 7808 200 CTD stations (Change 36) |
| 139.23 Y-32 | DAVID STARR JORDAN | 02/07/92 | 16/07/92 | 57b | 80 † | T, S, sig-t, SVA, AD, O2, PO4, NO2, NO3, SiO3, PT | 50-525 | 575 | | | Zoo-66 Pigm-80 PrPr-14 | Wd, W, Ta, Tw, Cid, Bar | Wa, Col, Tra | Publication 39.01-333 14 CTD stations |
| 139.23 2-02 | WHITING | 16/05/89 | 10/11/89 | 23b | 19 † | (T, S) Ø | 650-1200 | 1286 | | | | | NODC 319855, 319872, 319894 thru 319897 | |
| 139.23 2-03 | WHITING | 27/07/90 | 20/11/90 | 26 | 16 † | (T, S) Ø | 200-1085 | 1090 | | | | | NODC 319981 | |
| 139.23 DD-01 | TOWNSEND CROMWELL | 04/06/72 | 24/06/72 | 57b | 102 † | (T, S) Ø | 550-1000 | 1000 | | | | | NODC 319898 | |
| 139.24 B-01 | CAPE HATTERAS | 14/04/84 | 04/10/84 | 23b | 133 † | (T, S) Ø | 5-200 | 201 | | | | | NODC 329550, 329551, 329552 | (T, S, sig-t, SVA, AD, Vs)-5 Ø |
| 139.24 B-02 | CAPE HATTERAS | 07/04/85 | 05/10/85 | 23b | 359 † | (T, S,) Ø | 5-900 | 1000 | | | | | NODC 329553 sig-0t, Vs)-1 Ø | |
| 139.24 B-03 | CAPE HATTERAS | 16/01/86 | 24/10/86 | 23b | 289 † | (T, S) Ø | 5-1000 | 1000 | | | | | NODC 329563 thru 329572 | |
| 139.24 B-04 | CAPE HATTERAS | 20/03/87 | 23/09/87 | 23b | 227 † | (T, S) Ø | 5-1000 | 1000 | | | | | NODC 329573 thru 329579 | |
| 143.02 T-08 | BUSAN 852 | 02/02/91 | 19/06/91 | 50 51 52 | 165 | T, S, O2, PO4, NO2, NO | 30-500 | 500 | | | | Wd, Ta, Cid, Bar | Wa, Col, Tra | Publication 43.02-095 |
| 143.02 X-06 | GANGWON 867 | 04/02/91 | 29/10/91 | 52 | 140 | T, S, Ow | 45-500 | 500 | | | | Wd, Ta, Cid, Bar | Wa, Col, Tra | Publication 43.02-085 |
| 143.02 X-07 | GANGWON 867 | 02/04/92 | 28/10/92 | 52 | 267 | T, S, O2 | 50-500 | 500 | | | | Wd, Ta, Cid, Bar | Wa, Col, Tra | Publication 43.02-086 |
| 143.02 Y-06 | INCHEON 866 | 08/02/91 | 09/10/91 | 51 | 140 | T, S, O2 | 30-74 | 74 | | | | Wd, Ta, Cid, Bar | Wa, Col, Tra | Publication 43.02-085 |
| 143.02 Y-07 | INCHEON 866 | 09/02/92 | 12/10/92 | 51 | 139 | T, S, O2 | 18-75 | 75 | | | | Wd, Ta, Cid, Bar | Wa, Col, Tra | Publication 43.02-086 |

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Ø INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.
†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A, OCEANOGRAPHY DATA INFORMATION

| COUNTRY/ CATALOGUE NUMBER | | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | TYPES OF OBSERVATIONS | | | | REMARKS | | | | | |
|---------------------------------|-------|---|---------------|-------------|-----------------------|-----------------------------|-------------------------------|----------|----------------------------|---------|----------|--------------------------------|---------------------|----------------------------|---|
| | | | | | | OCEANOGRAPHIC | SERIAL | STATIONS | BATHY- THERMO- GRAPH | | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | SEA SURFACE | DATA CENTER REFERENCE NUMBER |
| 143.02 | 2-03 | BUSAN 851 | 03/02/91 | 17/10/91 | 50 51 52 | 173 | T, S, O2, PO4, NO2, NO3 | 45-500 | 500 | | | Wd, Ta, Cld, Bar | Wa, Col, Tra | Publication 43.02-085 | |
| 143.02 | 2-04 | BUSAN 851 | 07/02/92 | 23/02/92 | 50 51 52 | 100 | T, S, O2, PO4, NO2, NO3 | 25-500 | 500 | | | Wd, Ta, Cld, Bar | Wa, Col, Tra | Publication 43.02-086 | |
| 143.02 | AA-03 | JEONBUK 868 | 05/02/91 | 09/10/91 | 51 | 120 | T, S, O2 | 25-90 | 100 | | | Wd, Ta, Cld, Bar | Wa, Col, Tra | Publication 43.02-085 | |
| 143.02 | AA-04 | JEONBUK 868 | 09/02/92 | 09/10/92 | 51 | 120 | T, S, O2 | 25-90 | 90 | | | Wd, Ta, Cld, Bar | Wa, Col, Tra | Publication 43.02-086 | |
| 143.02 | BB-01 | BUSAN 206 | 03/08/91 | 13/08/91 | 50 51 52 | 77 | T, S, O2, PO4, NO2, NO3 | 30-500 | 500 | | | Wd, Ta, Cld, Bar | Wa, Col, Tra | Publication 43.02-085 | |
| 143.02 | BB-02 | BUSAN 206 | 16/04/92 | 19/06/92 | 50 51 52 | 86 | T, S, PO4, NO2, NO3 | 20-220 | 220 | | | Wd, Ta, Cld, Bar | Wa, Col, Tra | Publication 43.02-086 | |
| 143.02 | CC-01 | BUSAN 881 | 17/08/92 | 16/10/92 | 50 51 52 | 88 | T, S, O2, PO4, NO2, NO3 | 30-200 | 200 | | | Wd, Ta, Cld, Bar | Wa, Col, Tra | Publication 43.02-086 | |
| 202..... | | AUSTRALIA | | | | | | | | | | | | | (Change 4) |
| 202.01 | | Port Hacking, N.S.W. (C962) | 01/05/53 | 31/12/67 | 63 | 300 (834) * | | 50-250 | 300 | | | | | NODC 090985 thru 090999 | |
| 204..... | | BRAZIL | | | | | | | | | | | | | |
| 204.02 | A-01 | Anchieta Island | 16/02/84 | 30/07/84 | 32b | 6 | T, S, pH | 20-57 | 57 | | | | | Publication 04.06-032.1 | |
| 214..... | | GERMANY..... | | | | | | | | | | | | | |
| 214.01 | | DEUTSCHE BUCHT (LV), ELBE I (LV), FERHARNBELT (LV), Kiel (LV), Nordsee (Platform), Nordsee Boje II (Platform), TW/FMS (LV) | 01/01/57 | 31/12/91 | 1 4 | 1,756 * †† | T, S | 13-35 | 35 | | | Wd, Ta | | Publication 14.02-247 | * Period: Add 1991 †† * Total Stats: 13,538 †† (Change 50) |
| 224..... | | JAPAN..... | | | | | | | | | | | | | |
| 224.01 | A-15 | Ocean Data Buoys | 01/01/92 | 31/12/92 | 50 52 56 | | | | | | | Wd, Ta, Tw, Bar, Sol Rad | T Wa | Publication 24.07-089 | |
| 224.01 | A-16 | Ocean Data Buoys | 01/01/87 | 31/12/87 | 50 52 56 57a | | | | | | | Wd, Ta, Tw, Bar, Sol Rad | T Wa | Publication 24.07-090 | |

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0 INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.
†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

WDC-A, OCEANOGRAPHY DATA INFORMATION

| | | | | OBSERVATIONS | | | | | | | | | | DATA CENTER REFERENCE NUMBER | RE-MARKS | | |
|---------------------------------|--|---------------|-------------|----------------|----------------|-------------------------------|------------------|-------------------|--|----------------------------|----------|-----------------|--------------------------------|------------------------------------|----------|---------------------------------------|--|
| COUNTRY/ CATALOGUE NUMBER | COUNTRY/ SHIP OR FIXED STATION | START DATE | END DATE | IHB REG. | OCEANOGRAPHIC | | | TYPES OF STATIONS | | BATHY- THERMO- GRAPH | CURRENTS | BIO- LOGICAL | METEORO- LOGICAL | | | SEA SURFACE | |
| | | | | | NO.OF STAS. | PHYS. & CHEM. DATA | SAMPLE DEPTHS | MAX. DEPTH | | | | | | | | | |
| 239..... | UNITED STATES..... | | | | | | | | | | | | | | | | |
| 239.02 | Neah Bay, etc. (West Coast Shore Stations) | 01/01/61 | 31/12/92 | 57b | | | | | | | | | | T, S, sig-t | | Publication 39.01-334 . | * Period: Add 1992 (Change 50) |
| 243..... | KOREA..... | | | | | | | | | | | | | | | | |
| 243.01 A-37 | Ship not identified | 02/02/91 | 29/10/91 | 50 51 52 | | | | | | | | Zoo-420 | | | | Publication 43.02-085 | |
| 243.01 A-38 | Ship not identified | 07/02/92 | 28/10/92 | 50 51 52 | | | | | | | | Zoo-435 | | | | Publication 43.02-086 | |
| 243.01 C-21 | BUSAN 206, BUSAN 851, BUSAN 852 | 05/02/91 | 11/10/92 | 50 51 52 | 60 | T, S, O2, PO4, NO2, NO3 | 46-120 | 120 | | | | | Wd, W, Ta, Cld, Bar | Wa, Col, Tra | | Publication 43.02-085 | Korea-Japan Cooperative Expedition |
| 243.01 C-22 | BUSAN 206, BUSAN 851, BUSAN 881 | 09/02/92 | 13/10/92 | 50 51 52 | 59 | T, S, O2, PO4, NO2, NO3 | 40-120 | 120 | | | | | Wd, W, Ta, Cld, Bar | Wa, Col, Tra | | Publication 43.02-086 | |
| 243.01 E-03 | BUSAN 881, JEONBUK 868 | 11/08/92 | 17/08/92 | 51 | 20 | T, S, O2, PO4, NO2, NO3 | 30-86 | 86 | | | | | Wd, W, Ta, Cld, Bar | Wa, Col | | Publication 43.02-086 | Cruise Line 600 |
| 273..... | PEOPLE'S REPUBLIC OF CHINA | | | | | | | | | | | | | | | | |
| 273.01 | Xiamen, Haikou (Coastal Stations) | 01/01/71 | 31/12/71 | 49 | | | | | | | | | Wd, W, Ta, Cld, Bar, Vis | T, S | | Publication 73.07-023 73.07-024 | |

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† DENOTES DATA OBTAINED BY ELECTRONIC, IN-SITU, CONDUCTIVITY/SALINITY/TEMPERATURE/DEPTH (CTD/STD) SENSORS.

0 INDICATES MACHINE PROCESSED DATA THAT CORRESPONDS TO THE DATA CENTER REFERENCE NUMBER.

†† FOR ADDITIONAL DESCRIPTIVE REMARKS PLEASE SEE THE REMARKS SECTION.

PART III
REMARKS

REMARKS

| | | | | |
|-------------|-------------|---------------|---------------|--------------------|
| 106.19 A-10 | <u>SHIP</u> | <u>CRUISE</u> | <u>PERIOD</u> | <u>NO. OF STAS</u> |
| | VECTOR | 91/01 | 21-24/1/1991 | 11 |
| | VECTOR | 91/02 | 19-21/2/1991 | 11 |
| | VECTOR | 91/03 | 25-28/2/1991 | 13 |
| | VECTOR | 91/04 | 26-27/3/1991 | 10 |
| | VECTOR | 91/06 | 22-25/4/1991 | 11 |
| | VECTOR | 91/08 | 21-23/5/1991 | 10 |
| | VECTOR | 91/11 | 21-23/6/1991 | 10 |
| | R. B. YOUNG | 91/16 | 2-4/12/1991 | 10 |

| | | |
|-------------|------------------|---|
| 124.13 E-70 | <u>CURRENTS:</u> | Surface - 1,450 (Doppler Log) Surface Drifting Buoys - 3 |
|-------------|------------------|---|

| | | |
|-------------|------------------|---|
| 124.13 E-71 | <u>CURRENTS:</u> | Surface - 950 (Doppler Log) Surface Drifting Buoys - 3 |
|-------------|------------------|---|

| | | | | |
|-------------|-----------------|---------------|---------------|---------------------|
| 139.20 H-02 | <u>NODC NO.</u> | <u>PERIOD</u> | <u>CRUISE</u> | <u>NO. OF STAS.</u> |
| | 310043 | 9-27/9/1991 | HX159 | 106 CTD |
| | 310044 | 4/10/1991 | HX160 | 3 CTD |
| | 310045 | 24/7/1991 | L09 | 3 CTD |
| | 310046 | 22/8/1991 | L10 | 2 CTD |
| | 310047 | 14/11/1991 | L011 | 2 CTD |

| | | |
|-------------|--------------------|----------------|
| 139.23 Y-11 | <u>SHIP</u> | <u>CRUISE</u> |
| | TOWNSEND CROMWELL | 8301, 02, 03 |
| | ELLEN B. SCRIPPS | 8303 |
| | WECOMA | 8304 |
| | DAVID STARR JORDAN | 8305 |
| | ELLEN B. SCRIPPS | 8305 thru 8309 |
| | DAVID STARR JORDAN | 8309 |
| | ELLEN B. SCRIPPS | 8310 |
| | DAVID STARR JORDAN | 8311 |
| | NEW HORIZON | 8312 |

| | | |
|--------|----------------------|--------------------|
| 214.01 | <u>NO. OF STAS.:</u> | New Total - 13,538 |
| | <u>CURRENTS:</u> | Total: - 327,301 |

NOTE: WDC-A, Oceanography maintains detailed information concerning numbers of stations and numbers of current observations, archived by year, for each Light Vessel. This information is available upon request.

AVAILABILITY OF TRACK CHARTS

Track charts are available from WDC-A, Oceanography for cruises represented by the following Catalogue Numbers:

| <u>WDC-A Catalogue Number</u> | <u>Page No.</u> |
|-------------------------------|-----------------|
| 106.19 A-10 | 27 |
| 106.19 A-11 | 27 |
| 106.19 F-08 | 27 |
| 108.03 B-01 | 28 |
| 108.03 C-01 | 28 |
| 112.03 A-01 | 28 |
| 120.01 A-36 | 29 |
| 120.01 A-37 | 29 |
| 124.04 B-05 | 29 |
| 124.04 D-02 | 29 |
| 124.13 E-70 | 30 |
| 124.13 E-71 | 30 |
| 124.16 A-33 | 30 |
| 124.16 B-13 | 30 |
| 124.24 B-54 | 31 |
| 124.24 B-55 | 31 |
| 124.24 B-56 | 31 |
| 124.31 B-08 | 31 |
| 126.05 A-01 | 31 |
| 126.05 A-02 | 31 |
| 138.10 B-07 | 33 |
| 138.10 B-08 | 33 |
| 138.10 B-09 | 33 |
| 139.08 V-18 | 34 |
| 139.23 Y-32 | 36 |
| 204.02 A-01 | 37 |

PART IV
DATA HOLDINGS OF
RNODC's AND
SPECIALIZED DATA CENTERS

DATA HOLDINGS OF RNODC's AND SPECIALIZED DATA CENTERS

This section of the Change Notice provides information on the availability of specialized data sets prepared by the various Responsible National Oceanographic Data Centers (RNODC's) and other Specialized Data Centers. Only those data sets that have actually been received by WDC-A, Oceanography are described in this section. WDC-A can provide magnetic tape copies of these data sets in the originator's format.

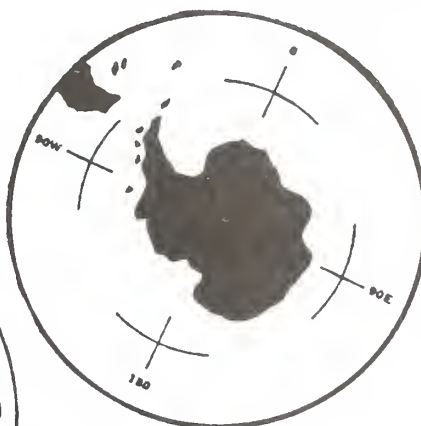
These data products are not described in the usual manner in the Catalogue portion of the Change Notice (except for certain separately-identified cruises that are also included in data sets such as FOY), as the data are not usually merged with the standard WDC-A, Oceanography data bases. Thus they constitute a suite of data products, prepared by RNODC's and other Specialized Data Centers, that are separate and distinct from the standard data types regularly catalogued in the Change Notices and normally available from WDC-A.

Such data products are not necessarily intended to be routinely exchanged by the WDC's under normal international data exchange guidelines. They may be voluminous or costly to prepare and, thus, may be precluded from regular data exchanges between WDC's and their exchange cooperators. Data sets in automated form are available from the WDC's usually at a cost not to exceed the cost of reproduction and postage.

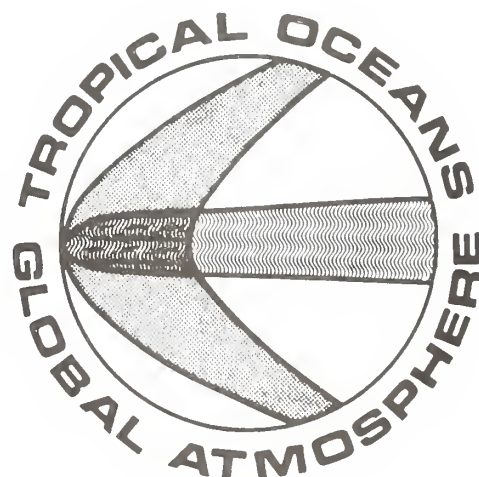
MEDALPEX



IGOSS



SOC



RNODC FOY

FGGE OPERATIONAL YEAR GLOBAL OCEAN CLIMATE DATA BASE

The Global Ocean Climate Data Base is available from the National Oceanographic Data Center (NODC) which served as the Responsible National Oceanographic Data Center for the FGGE* Operational Year (RNODC/FOY). The Global Ocean Climate Data Base is a collection of oceanographic data submitted to NODC by 17 different countries. Although the formal FGGE Operational Year was from 1 December 1978 to 30 November 1979, the data set covers the extended FOY period from 1 September 1978 to 29 February 1980.

The data base includes four types of data: (1) oceanographic hydrocast (bottle) data, (2) conductivity/ salinity-temperature-depth (C/STD) data, (3) expendable bathythermograph (XBT)

data, and (4) Eulerian current (current meter) data. The data are recorded on magnetic tape in two different formats: (1) the Intergovernmental Oceanographic Commission General Exchange Format 3 (GF3) and (2) NODC archive formats (different format for each of the four types of data). In GF3 the data base comprises eight magnetic tapes; in the NODC formats the data base comprises four tapes.

The FGGE Operational Year was the culmination of a series of international ocean/atmosphere research programs conducted in the 1970's. This effort, in turn, was a steppingstone toward the increasingly ambitious and large-scale research and monitoring programs of the 1980's and 1990's that are directed toward fuller understanding of tropical dynamics and their influence on global ocean/atmosphere phenomena.

**FGGE = First GARP Global Experiment, also known as the Global Weather Experiment.
GARP = Global Atmosphere Research Program.*



The FGGE/FOY Data Base

The FGGE/FOY Global Ocean Climate Data Base compiled by the RNODC contains: 10,413 Oceanographic hydrocast (bottle) stations; 4,030 CTD/STD casts; 28,733 expendable bathythermograph (XBT)

temperature profiles; and 294 months of time-series data from current meter moorings. The sources of these data are summarized in Table 1.

Table 1. FGGE Operational Year Global Ocean Climate Data Base

| Country | Data Type | | | |
|--------------------------------|---|-----------------------|-------------------|------------------------------------|
| | Oceanographic Stations (stations) | CTD/STD (stations) | XBT (stations) | Current Meter (meter-months) |
| Australia | -- | -- | 2,754 | -- |
| Canada | 324 | -- | 507 | -- |
| People's Republic of China | 318 | -- | -- | -- |
| Republic of the Congo | 307 | -- | -- | -- |
| France | -- | -- | 307 | -- |
| German Democratic Republic | 74 | -- | -- | -- |
| Federal Republic of Germany | -- | -- | 1,366 | -- |
| Ghana | 335 | -- | -- | -- |
| Italy | -- | -- | 55 | -- |
| Japan | 1,138 | -- | 832 | -- |
| Philippines | -- | -- | 8 | -- |
| Poland | 87 | -- | 267 | -- |
| Republic of South Africa | -- | -- | 56 | -- |
| Spain | -- | -- | 180 | -- |
| UK | -- | 64 | 944 | -- |
| USA | 1,271 | 3,966 | 20,727 | 294 |
| USSR | 6,559 | -- | 730 | -- |
| TOTAL | 10,413 | 4,030 | 28,733 | 294 |

Table 2 lists the number of tapes included in the data set. Customers may order the entire set of

tapes or only the tape(s) for one or more of the four different data types in either of the two format options.

| Table 2. FOY Global Ocean Climate Data Tapes | | | |
|--|----------------------------------|----------------------------------|------------------------------------|
| Data Type | Data Quantity | Number of Tapes | |
| | | GF3 Format (1600 bpi) | NODC Format (6250 bpi)* |
| Oceanographic Station (hydrocast) | 10,413 stations (128 cruises) | 2 | 1 |
| CTD/STD | 4,030 stations (62 cruises) | 1 | 1 |
| XBT | 28,733 stations (571 cruises) | 3 | 1 |
| Current Meter | 294 months (27 meters) | 2 | 1 |
| TOTAL | | 8 | 4 |
| <i>*Data tapes in NODC archive formats are also available by special request in 1600 bpi density</i> | | | |

Data Availability

Magnetic tape copies of the FOY Global Ocean Climate Data Base are available from the RNODC in either GF3 format or in NODC archive formats. Magnetic tape characteristics are: (1) GF3 format -- 9 track, 1600bpi, ANSI/ASCII, non-labeled, record length = 1920, unblocked; (2) NODC formats -- 9 track, 6250 bpi, ANSI/ASCII, non-labeled, variable record length, maximum blocksize = 4,160 (oceanographic station and CTD/STD data), 2,600 (XBT data), and any multiple of 60 (current meter data).

Complete sets of tapes or individual tapes are available at the cost of tape reproduction from:

World Data Center A, Oceanography
NOAA
Washington, DC 20235, USA

Telephone: 202-606-4571
FAX: 202-606-4586
Electronic mail: wdca @ nodc.noaa.gov
(Internet).

RNODC MEDALPEX (Sea Level)

MEDITERRANEAN ALPINE EXPERIMENT SEA LEVEL DATA SET

In 1975, the IOC decided to support the development of an oceanographic program in the Mediterranean during the GARP Alpine Experiment (ALPEX). The MEDALPEX project took place between 1 September 1981 and 30 September 1982, with a special period of observation from 15 February 1982 to 30 April 1982. It was a multi-national project involving scientists from 7 countries.

The main purpose of MEDALPEX was to increase understanding of the effect of wind forcing on the dynamics of the western part of the Mediterranean Basin. Specific studies were undertaken, each having a particular scientific objective including:

1. The interrelationship between the general circulation and mesoscale eddies
2. Offshore dynamic response mechanisms under severe weather conditions
3. Storm surges and the piling up of water, especially in the Adriatic and Ligurian seas

The measurement of sea level was considered to be an important component of the observation program to support these studies. A wide range of other types of oceanographic data were also collected, including classical and synoptic meteorological measurements, data collected using remote sensing techniques and data from current meters, thermistor chains, waverider buoys, CTDs and XBTs.

The Permanent Service for Mean Sea Level (PSMSL) was requested by IOC to fulfil the role of the Responsible National Oceanographic Data Center for the MEDALPEX sea level data. The work was under-taken on behalf of PSMSL by the Marine Information and Advisory Service (MIAS) - U.K.'s national oceanographic data center (now the British Oceanographic Data Centre.)

Sea level data were submitted to MIAS from 29 of the 40 MEDALPEX sites. An inventory of the data is given on the following page. Measurements from 28 of the sites were taken using conventional stilling wells and, with one exception, were supplied to MIAS as hourly values. Data from the remaining site, off the coast of Corsica, were collected by an Aanderaa water level recorder at half-hourly intervals.

INVENTORY OF DATA RECEIVED
BY MEDALPEX SEA LEVEL DATA CENTER

| SITE | LATITUDE | LONGITUDE | START DATE | SERIES DURATION | CYCLE INTERVAL |
|-------------------|-----------|-----------|------------|-----------------|----------------|
| | DDD MM.MH | DDD MM.MH | DD/MM/YY | WEEKS | SECS |
| CADIZ | 36 32.0N | 6 17.0W | 01/09/81 | 56 | 3600 |
| TARIFA | 36 0.0N | 5 36.0W | 01/09/81 | 56 | 3600 |
| GIBRALTAR | 36 8.0N | 5 21.0W | 01/09/81 | 56 | 3600 |
| CEUTA | 35 54.0N | 5 19.0W | 01/09/81 | 56 | 3600 |
| ALGECIRAS | 36 7.0N | 5 26.0W | 01/09/81 | 56 | 3600 |
| PUERTOS BANUS | 36 37.0N | 4 55.0W | | NO DATA | |
| MALAGA | 36 43.0N | 4 25.0W | 01/09/81 | 56 | 3600 |
| ALMERIA | 36 49.7N | 2 29.2W | 14/08/81 | 58 | 3600 |
| CARTEGENA | 37 36.0N | 0 59.0W | | NO DATA | |
| ALICANTE I | 38 20.3N | 0 30.4W | 23/08/81 | 60 | 3600 |
| ALICANTE III | 38 20.3N | 0 30.7W | 28/08/81 | 60 | 3600 |
| PALMA DE MALLORCA | 39 33.0N | 2 38.0E | 01/09/81 | 56 | 3600 |
| BLANES | 41 41.0N | 2 48.0E | | NO TIDE GAUGE | |
| ROSAS | 42 15.0N | 3 11.0E | | NO TIDE GAUGE | |
| PORT VENDRES | 42 31.0N | 3 6.0E | 28/12/81 | 39 | 3600 |
| SETE | 43 25.0N | 3 43.0E | | NO DATA | |
| FOS | 43 25.0N | 4 46.0E | | NO DATA | |
| TOULON | 43 7.0N | 5 55.0E | 30/08/81 | 56 | 3600 |
| NICE | 43 42.0N | 7 16.0E | 03/07/81 | 68 | 3600 |
| MONACO | 43 44.0N | 7 25.0E | 29/06/81 | 69 | 3600 |
| OFFSHORE | 42 34.8N | 8 44.0E | 06/04/82 | 18 | 1800 |
| NEAR CALVI | 42 34.8N | 8 44.0E | 29/07/82 | 9 | 1800 |
| AJACCIO | 41 55.0N | 8 43.0E | 30/08/81 | 49 | 3600 |
| CAGLIARI | 39 13.0N | 9 8.0E | | NO DATA | |
| SAVONA | 44 18.0N | 8 28.0E | | NO DATA | |
| GENOVA | 44 24.0N | 8 54.0E | 31/08/81 | 58 | 3600 |
| LA SPEZIA | 44 7.0N | 9 48.0E | | NO DATA | |
| LIVORNO | 43 33.2N | 10 18.2E | 31/08/81 | 49 | 3600 |
| CIVITAVECCHIA | 42 5.7N | 11 47.4E | 25/08/81 | 22 | 3600 |
| NAPOLI | 40 50.4N | 14 16.2E | 31/08/81 | 56 | 3600 |
| PALERMO | 38 8.0N | 13 23.0E | | NO DATA | |
| ANCONA | 43 37.0N | 13 31.0E | 01/09/81 | 56 | 3600 |
| PTO CORSINI | 44 35.0N | 12 20.0E | | NO DATA | |
| VENEZIA | 45 26.0N | 12 20.0E | 01/01/81 | 104 | 3600 |
| KOPER | 45 33.0N | 13 44.0E | 28/02/82 | 9 | 3600 |
| ROVINJ | 45 5.0N | 13 38.0E | 28/02/82 | 9 | 3600 |
| BAKAR | 45 18.0N | 14 32.0E | 28/02/82 | 9 | 3600 |
| ZADAR | 44 5.4N | 15 16.3E | 28/02/82 | 9 | 3600 |
| NOVALJA | 44 33.3N | 14 13.2E | 28/02/82 | 9 | 3600 |
| SPLIT | 43 30.0N | 16 26.0E | 28/02/82 | 9 | 3600 |
| DUBROVNIK | 42 40.0N | 18 4.0E | 28/02/82 | 9 | 3600 |
| BAR | 42 5.0N | 19 5.0E | 28/02/82 | 9 | 3600 |

In compiling the dataset, MIAS translated all incoming data into a common format with elevation values standardized to meters and times to GMT. The data for each site were plotted as a time series and checks were carried out for gaps or constant values, spikes, spurious data or punching errors. Further checks were carried out by tidally analyzing and low pass filtering the data. Non-tidal fluctuations were investigated using principal component analysis. Qualifying information applicable to the data from each site was checked for inconsistencies and completeness, and appropriate documentation was stored with the data in the form of plain language records. The complete quality controlled dataset, including documentation, is available as a single magnetic tape formatted in GF3, the IOC's standard format for the exchange of oceanographic data. A copy of the magnetic tape may be obtained at a cost not to exceed the cost of reproduction and postage from:

World Data Center A, Oceanography
National Oceanic & Atmospheric Administration
Washington, D.C. 20235
U.S.A.

Electronic mail: [wdca @ nodc.noaa.gov](mailto:wdca@nodc.noaa.gov) (Internet)

or

RNODC/MEDALPEX Sea Level Data
BODC
Bidston Observatory
Merseyside L43 7RA
U.K.

Electronic mail: [bodcmail @ ua.nbi.ac.uk](mailto:bodcmail@ua.nbi.ac.uk) (Internet)

TROPICAL OCEAN and GLOBAL ATMOSPHERE PROGRAMME TROPICAL SUBSURFACE DATA SET

TOGA Tropical Subsurface Data Centre

The TOGA Tropical Subsurface Data Centre in Brest operates within the framework of both the IOC's International Oceanographic Data Exchange (IODE) system and the Joint IOC-WMO Integrated Global Ocean Services System (IGOSS). The Centre collects subsurface ocean observations for the tropical oceans (30°N-30°S) from the following sources:

1. tropical oceans observations from the IGOSS network;
2. additional vertical temperature profiles from XBT's and from drifting or moored buoys with thermistor chains, not sent over the GTS;
3. time series of temperature and conductivity (salinity) at fixed depth from moored thermistor chains;
4. surface temperature and conductivity (salinity) data and vertical profiles of temperature and conductivity as from CTD's, bottle casts, and WCTD's; and
5. other subsurface ocean temperature and conductivity (salinity) measurements from process-oriented intensive oceanographic observation projects in the tropical oceans.

Initially, data are collected from radio transmissions, with fully digitized and quality controlled observations added with time.

The subsurface thermal data described above are analyzed, and the Centre produces quality-controlled Level II-B data sets for the tropical oceans for the ten-year period (1985-1994). The Centre is also responsible for provision of these data sets on magnetic tape in GF-3 format to other TOGA Data Centres and to the World Data Centers, Oceanography at appropriate intervals.



WDC-A, Oceanography Support to TOGA

WDC-A, Oceanography serves as an archival center for the TOGA Tropical Subsurface Data Sets. Its responsibilities are to provide TOGA data sets to requesters in the international scientific community, at a cost not to exceed that of data reproduction and postage, and to provide copies of all TOGA data sets received to World Data Center B, Oceanography in exchange.

WDC-A, Oceanography provides additional data management support to the TOGA program by its contributions to the enhancement of global tropical thermal data bases. WDC-A has utilized the IOC's lists of Declared National Programs (DNP's) to identify selected cruises for which data were observed in the tropical oceans and, subsequently, requested the data. Report of Observations/Samples Collected by Oceanographic Programs (ROSCOP) marine data inventory forms have been used in the same manner to identify available tropical oceans data. The compilation of the Time Series Data Inventories of the world's oceans by WDC-A, has also resulted in some cases in the identification of available tropical ocean observations. WDC-A expects to utilize these tools increasingly in the future to acquire selected data sets intended to further enhance the tropical oceans data bases.

Climate researchers and modelling experts have identified the digitization of historical oceanographic observations as one of the key elements required in data management support for TOGA and other Global Change programs, such as GOFs and WOCE. Such data sets are frequently extremely useful in filling spatial or temporal gaps in existing digital data holdings. WDC-A, Oceanography's data archives contain data for a substantial number of observations in manuscript form that have never been processed. A significant portion of these could provide support to TOGA. For example, some Japan Fisheries Agency standard sections in the Western Pacific are in the TOGA area. Many of these manuscript data sets would be amenable to data entry by an optical scanning device. The possibility of support for procurement of such a device is being explored by WDC-A.

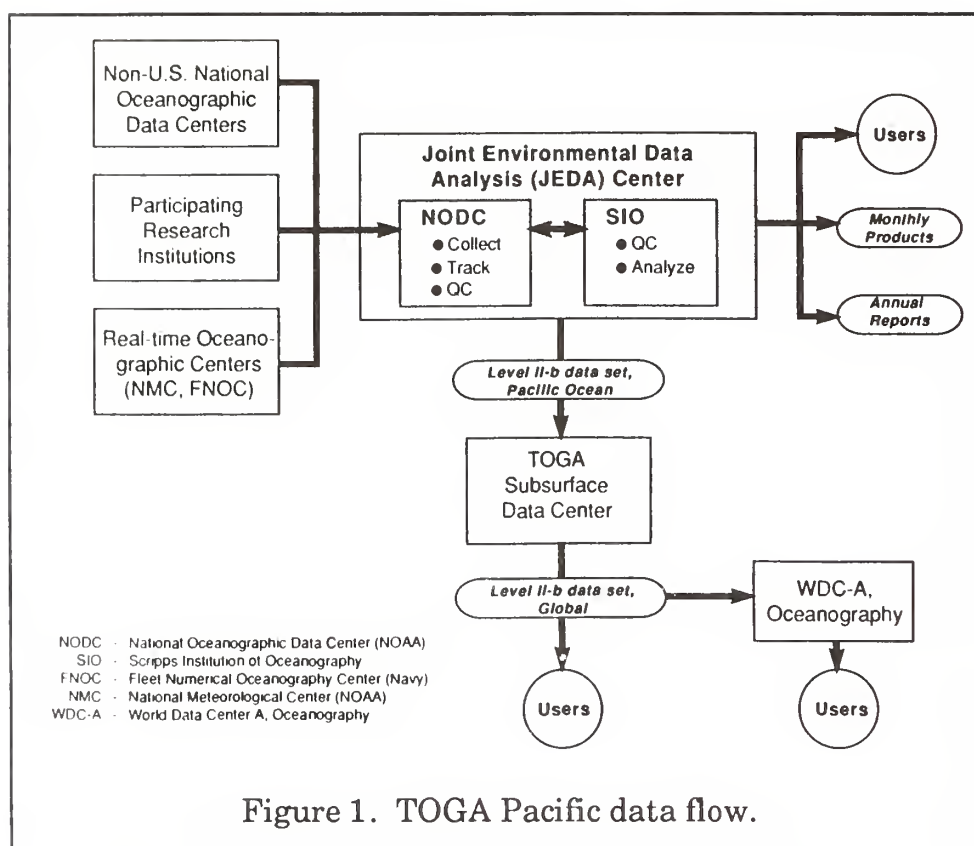
TOGA Tropical Subsurface Data Products

WDC-A receives Level II-B data sets from the Subsurface Data Centre in Brest for both Atlantic and Indian Oceans data, as previously described. Magnetic tape copies of the Level II-B data sets for the Atlantic and Indian Oceans are then provided to WDCs B and D, Oceanography in exchange. Magnetic tape copies of these data sets are available at the cost of tape reproduction from:

World Data Center A,
Oceanography
National Oceanic and
Atmospheric Administration
Washington, D.C. 20235 U.S.A.

TOGA Subsurface Data Centre
Centre IFREMER de Brest
BP 70
29263 Plouzane
France

Email: wdca @ nodc.noaa.gov (Internet) Email: rebert @ orstom.fr (Internet)



WDC-A, by virtue of its collocation with the U.S. National Oceanographic Data Center (NODC), also has access to the Tropical Pacific Ocean data set prepared jointly by NODC and the Scripps Institution of Oceanography (SIO), serving as the Joint Environmental Data Analysis (JEDA) Center. JEDA tracks, acquires, quality controls, and merges all available subsurface thermal data for the Tropical Pacific. NODC assembles, reformats and initiates quality control of the data; SIO performs further quality control and analysis of the data. The TOGA Pacific data flow is depicted in Figure 1. Each yearly Level II-B Pacific Ocean data set undergoes the full spectrum of quality control and analysis by the JEDA Center. It is then converted to the GF-3 format and provided to WDC-A, which in turn provides tape copies to WDC-B and WDC-D in exchange. The TOGA Pacific Data Sets are available on magnetic tape at the cost of tape reproduction from:

World Data Center-A, Oceanography
 NOAA
 Washington, D.C. 20235 U.S.A.
 Email: wdca@nodc.noaa.gov (Internet)

JEDA Center
 National Oceanographic Data Center
 NOAA
 Washington, D.C. 20235 U.S.A.
 Email: mhamilton@nodc.noaa.gov
 (Internet)

JEDA Center
 Scripps Institution of Oceanography
 University of California
 La Jolla, CA 92093 U.S.A.
 Email: nhall@nodc.noaa.gov
 (Internet)

SOUTHERN OCEANS DATA SET

The RNODC/Southern Oceans (RNODC/SOC) was created in order to provide a regional data management and data information service for Southern Oceans physical and chemical oceanographic data. The RNODC was created under guidelines set forth in Recommendation XII.1 by the IOC's Technical Committee on International Oceanographic Data Exchange (IODE XII, Moscow 10-17 December 1986).

The Terms of Reference of the RNODC/SOC include the following responsibilities:

- Acquire, quality control, and store in standard format the physical and chemical data obtained by the international community from the cruises and research programmes carried out in the Southern Oceans;
- Co-operate closely with the World Data Centers, Oceanography by sending regular shipments (at least once a year), free of charge, of complete sets of physical and chemical data stored on magnetic tapes in GF3, and inventories, data summaries, and other data products related to the physical and chemical data from the Southern Oceans;
- Assist the World Data Centers by sending copies to them of any ROSCOP forms submitted to the RNODC-SOC;
- Co-operate with the BIOMASS Data Center, regarding exchange of data and inventories, as well as other data products.

The RNODC-SOC is located in and operated by the Argentine Oceanographic Data Center (CEADO).



RNODC/SOC Oceanographic Data Set

The RNODC/SOC data set contains data for all available oceanographic stations for the Southern Oceans between 50° and the Antarctic Continent. Data for a total of 11,093 oceanographic stations taken during 294 Southern Oceans cruises are included in the data set. Seasonally, the data totals are nearly 2,000 observations taken during the Austral Winter (April-September) and more than 9,000 observations taken during the Austral Summer (October-March). Southern Oceans observational data taken by 16 countries have been received by the RNODC.

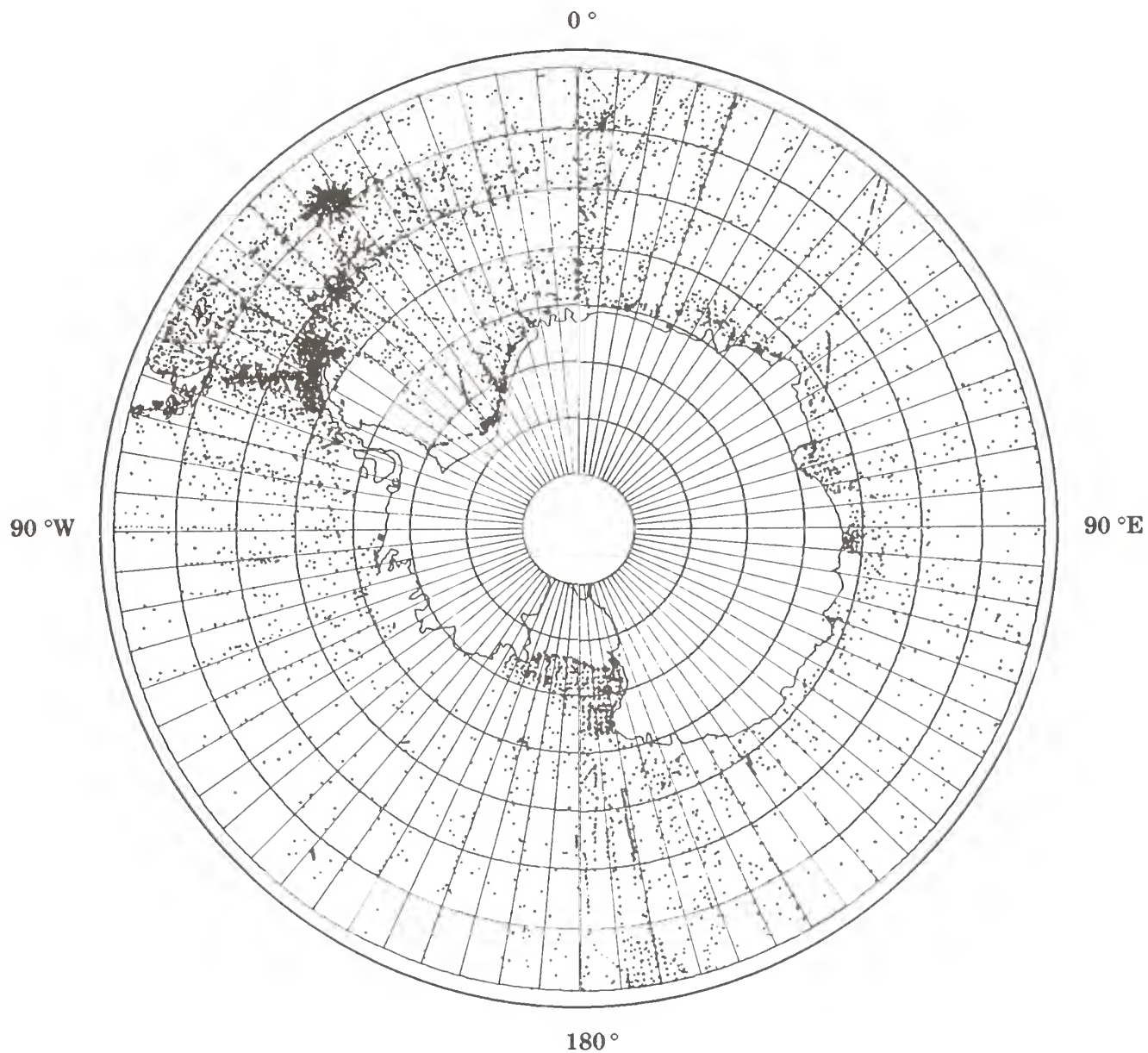
The RNODC/SOC data set is available from:

RNODC/SOC
Centro Argentino de Datos Oceanograficos
Avda. Montes de Oca 2124
1271 - Buenos Aires
Republica Argentina

or

World Data Center A, Oceanography
National Oceanic & Atmospheric Administration
Washington, D.C. 20235 U.S.A.
Email: wdca @ nodc.noaa.gov (Internet)

SOUTHERN OCEANS OCEANOGRAPHIC STATION PLOT



This plot shows the locations of 11,093 oceanographic data observations made in the Southern Oceans and registered in the RNODC/SOC master data file.

INTEGRATED GLOBAL OCEAN SERVICES SYSTEM DATA SET

Background

The Integrated Global Ocean Services System (IGOSS) is a worldwide system for the rapid collection, exchange and analysis of oceanographic data and the timely preparation and dissemination of ocean products and services. IGOSS was established to support oceanographic and meteorological research efforts by providing: (1) a global distribution of oceanographic observations, (2) a mechanism for the timely and effective exchange of data, and (3) the preparation of oceanographic analysis products capable of supporting global change and climate research studies. IGOSS products and services can be useful for input to large scale circulation models, for research survey planning, and for direct application in commercial fisheries, recreation, commercial shipping, and search and rescue efforts. Real-time ocean products currently available include sea surface and subsurface temperature analyses and graphical depictions of mixed layer depths and ocean frontal positions. Additional analyses and data summaries available as delayed-mode products include: (1) ocean currents, (2) salinity, (3) distribution of pollutants, and (4) weekly and monthly temperature means. The IGOSS data are BATHY (profiles of temperature with depth) and TESAC (temperature/salinity/current profiles with depth).

The major operational elements of the IGOSS program are: (1) observing system, (2) data processing and services system, (3) telecommunication arrangements, (4) marine pollution monitoring, and (5) data archival and exchange. The organizational structure of the IGOSS data processing and services system consists of World Oceanographic Centers in Moscow and Washington and National and Specialized Oceanographic Centers in participating nations. Data from all cooperating nations are combined in standard formats at the World Oceanographic Centers, and then used as input to global and hemispheric analyses for improved weather forecasting, global climate studies, and a variety of products for oceanographic research uses. National Oceanographic Centers provide quality control for data from their country entering the international exchange system via a high speed global telecommunications link called the Global Telecommunication System (GTS) of the World Weather Watch.



IGOSS



Long-range data exchange and service arrangements and long-term archival activities for IGOSS data are performed by National Oceanographic Data Centers in Japan, the U.S.S.R., and the United States. These NODC's, serving as Responsible National Oceanographic Data Centers (RNODC's) for IGOSS, compile archives of IGOSS data and products, assume responsibilities for specified regions of the world oceans, and deal with problems of quality control. They maintain geographically sorted, updated magnetic tape files of observations received via the GTS.

RNODC's/IGOSS Terms of Reference

The terms of reference for RNODC's/IGOSS are as follows:

1. Acquire BATHY and TESAC datasets and sub-surface temperature data from drifting and moored buoys from IGOSS Specialized Oceanographic Centres (SOC) for area of responsibility; apply supplementary quality control to acquired data and provide services to users after 30 days from receipt of that data;
2. Acquire non-operational BATHY, TESAC, and sub-surface temperature data from drifting and moored buoys and/or datasets for area of responsibility; apply quality control on non-operational data, prepare integrated datasets, and provide services to users;
3. Maintain a data base and inventories for areas of responsibility;
4. Prepare products based on operational and non-operational IGOSS data, as appropriate; also, archive and make available to users, selected data products provided by SOC's and analysis centres;
5. Provide for exchange of IGOSS data in GF-3 format with other RNODC's or to other users as requested;
6. Transmit datasets in GF-3 format, inventories of archived data, and selected data products to the WDCs annually;
7. Provide for exchange of documentation and software regarding quality control and processing procedures, with other RNODC's, as possible;
8. Participate in efforts to monitor data flow, and participate, as feasible, in IOC training programmes;
9. Prepare inventories of available data sets of the RNODC's area of interest and transmit them to the IOC Secretariat semiannually.

RNODC/IGOSS - Japan

The RNODC/IGOSS-Japan is operated by the Japan Oceanographic Data Center (JODC), with support from the Japan Meteorological Agency (JMA), which serves as a Specialized Oceanographic Center (SOC) for IGOSS. At the SOC, systematic quality control of the collected BATHY/TESAC reports is made. The SOC compiles the IGOSS monthly summaries including maps showing the geographical distribution of BATHY/TESAC messages and numbers of messages of individual ships and sends them to the Secretariat of the IOC.

IGOSS data submitted by the SOC are stored in three formats at the RNODC/IGOSS. The first includes the original data file compiled on a semiannual basis. This file contains the collected and processed data from the GTS and other operational sources within the area of responsibility. The second contains the data and data inventory files recorded in a form of the SYNDARC Format, and is available to users as computer-generated data summaries, statistical presentations, and graphical plots, or in a medium which allows the user to further process the data using a personal computer. During the conversion process, minimum quality control procedures are applied to the original data based on IOC Manuals and Guides No. 3. The third is the JODC-formatted version of the data inventory file. From this file, data products such as data summaries and location plots of observations are provided to users, as well as to the IOC and WMO.

RNODC/IGOSS - Russia

The RNODC/IGOSS-Russia and SOC for IGOSS data was established in 1984 under the auspices of the All-Union Scientific Research Center for Hydrometeorological Information and the Russian Hydrometeorological Scientific Research Center (Russian Hydrometcenter). The responsibilities of the RNODC/IGOSS include the collection of BATHY/TESAC messages and logs, quality control of the data, preparation of data sets on magnetic tape, and the development of products concerning availability and time-space data distribution. The RNODC/IGOSS also provides national and international users with copies of data, results of analyses, and with other products for its area of responsibility.

The responsibilities of the SOC include preparation, publication, and distribution of different types of operational oceanographic products on a regular basis including those distributed via FAX machines that are readily available to different groups of users.

These activities are carried out in accordance with the procedures spelled out in the IOC's Guide to Operational Procedures for the Collection and Exchange of Oceanographic Data (BATHY and TESAC), 1985 and the Guide to the IGOSS Data Processing and Services System, 1983.

RNODC/IGOSS - U.S.

The RNODC/IGOSS-U.S., located at the National Oceanographic Data Center (NODC), receives near real-time data weekly from the Ocean Products Center at Suitland, Maryland and the Ocean Applications Group in Monterey, California. These data are extracted from the Global Telecommunications System (GTS) on a daily basis for screening and editing. At the RNODC, the near real-time data sent by the two organizations are run through a series of programs to convert the data into NODC's Universal Bathythermograph (UBT) format. This data set is next sorted by date, time, position, and an indicator of the source of the data. The sorted file is then compared with existing observations and duplicates are eliminated.

The records retained are then sorted by reference number, date, and time to produce a cruise-ordered data set. From this final data set, inventory records are created and applied to NODC's Data Inventory Data Base (DINDB). These data are then merged into the RNODC/IGOSS Archive. The Archive is updated on a monthly basis in geographical sequence.

Data in the U.S. RNODC/IGOSS Archive are then available for international exchange and can be provided to users in a variety of forms ranging from magnetic tape copies to computer-generated data summaries, statistical analyses, and graphic plots.

Availability of IGOSS Data and Products through WDC A, Oceanography

Various RNODC/IGOSS data, analyses, and products are available through WDC-A, Oceanography. Upon request, WDC-A will provide magnetic tape copies of pertinent data products, or, alternatively, refer the requester to the appropriate IGOSS data source.

RNODC DRIBU

RNODC FOR DRIFTING BUOYS

Background

The Marine Environmental Data Service (MEDS) began operation of the RNODC/Drifting Buoy Data in January 1986. The RNODC acquires Drifting Buoy Data from worldwide sources, makes the data available to international scientific programs, and prepares geographical plots of Drifting Buoy locations and tracks for the world oceans on a monthly basis. The RNODC also provides monthly statistics of operational buoys and the number of messages received from them.

Acquisition of Drifting Buoy Data

There are three procedures by which Drifting Buoy Data are received by the RNODC. The first and more traditional is for the principal investigator to submit his data directly to the RNODC, or to his National Oceanographic Data Centre which in turn submits the data to the RNODC. For historical data sets, this is the only option available. Data received in this way are usually of the highest quality, since they have undergone the most discriminating calibration and quality control procedures under the direction of the principal investigator; however, data entering the system in this manner are not sufficiently timely to meet the operational requirements of the major global science programs.

The second path for data flow to the RNODC is via the GTS. An advantage of this procedure is that the data are available in time scales suitable for the operational requirements of researchers in programs such as TOGA and WOCE, as well as for other operational users such as meteorological forecasters. Data received in this way may be less accurate, because they have not been fully reviewed and assessed by the principal investigator. For drifting buoy data, there is also a problem in that using the DRIBU format on the GTS for some buoys may limit the data that can be transmitted, because of a requirement to restrict the information to 256 bits.

A third procedure involves retrieving the DRIBU data as they pass through Services ARGOS. Although these data still have not been reviewed and assessed by the principal investigator, they are an improvement over the GTS data in that both time of observation and position time are available to improve velocity calculations. Data received by Service ARGOS are stored on magnetic tape for a period of 90 days. After this time, the tapes are reused and the data then reside solely in the hands of the principal investigators. Canada and the United States have

agreed to share the cost of buying copies of these tapes for the RNODC. Data from a buoy can only be provided to the RNODC if the principal investigator has given consent in writing.

RNODC/Drifting Buoy Data Base

MEDS utilizes a hierarchical database, called System 2000, to store the drifting buoy data; because of the volume of data, each year of data is stored in its own data base. In order to provide services to users at all time scales and to have available at each time scale the best data possible, the RNODC has decided to accept all data using the following hierarchical guidelines:

1. Where possible, Principal Investigators are requested to make their data available to other operational users and to the RNODC by having the data transmitted on the GTS. The RNODC will copy all available data from the GTS, quality control it, and update it into the data base on a weekly basis.
2. Principal Investigators are also requested to agree to have Service ARGOS provide a copy of their data to MEDS via tape each month whether or not those data have already been on the GTS. The data circulated on the GTS have only the one time included which poses a difficulty in calculating velocities. Thus, the tape data with the two times is an improvement to the database and will be used to replace the GTS data in the database. In addition, data will be picked up which could not be circulated on the GTS because of the format of the transmission from the buoy.

If Service Argos has not already been supplied with the calibration constants, channel allocations, and algorithms, or has not been requested to make the conversions to physical units, there will be a requirement for the RNODC to obtain this information from the principal investigators. Principal investigators are reminded that if the sensor data cannot be made available, the position data itself is of value for the database.

3. Principal Investigators are requested to provide a copy of their Drifting Buoy Data either directly to the RNODC when the fully processed, quality controlled version is available, or to provide the data to their National Oceanographic Data Centre, where the RNODC will be requesting such data on a regular basis. Data received by this path will replace GTS or Service ARGOS versions of the data in the database.

By receiving data in the configuration set forth above, and replacing earlier, lower quality data as higher quality versions of the data arrive, the RNODC can offer

users a choice between timeliness and quality, as dictated by their particular requirements.

The RNODC recognizes that in some cases there exists a need to restrict distribution of data to protect a scientist's right to benefit first from collection activities carried out at considerable effort and cost. It is noted that the large international experiments generally have data exchange agreements that state when the data are available to other participants and to those outside the program. The RNODC will honor such data exchange agreements and will, at a scientist's request, restrict further distribution of the data according to the terms of the pertinent agreement. In regard to data from individual scientists, bilateral agreements on further distribution of data for a period of up to two years can also be made

RNODC Services

As mentioned earlier, the RNODC maintains its drifting buoy data in a data base structure. This provides maximum flexibility when meeting a request. While a number of different qualifiers may be used to retrieve data, the most common are area and time. Requesters may also specify all data or only those which have passed the quality control procedures. On output, the data can be written to magnetic tape in a standard subset of the GF3 formatting system or in some other agreed ad hoc character format, if appropriate. In choosing the data format, users should be aware that the GF3 Formatting System is supported by a powerful and growing software system which is available for many of the more widely used host computers.

Each month, the RNODC publishes a summary of the data it has received in real time; also produced are global maps of drifting buoy tracks for the previous month. These maps are issued regularly on a monthly basis. Anyone wishing to receive this summary, should contact the RNODC. There is no charge to receive this product.

To obtain the RNODC Drifting Buoy Data Set, requesters should contact one of the following:

RNODC for Drifting Buoy Data
Marine Environmental Data Service
Department of Fisheries and Oceans
200 Kent Street
Ottawa K1A 0E6 Canada

Telephone: 613-990-0268
Telex: 053-4428
Email: wilson @ ottmed.meds.dfo.ca
(Internet)

World Data Center A,
Oceanography
NOAA
Washington, D.C. 20235 U.S.A.

Telephone: 202-606-4571
FAX: 202-606-4586
Email: wdca @ nodc.noaa.gov
(Internet)

TOGA

TROPICAL OCEAN and GLOBAL ATMOSPHERE PROGRAMME SEA LEVEL DATA SET

TOGA Background

A major component of the TOGA International Implementation Plan is the monitoring of the global atmosphere and the upper layers of the three tropical oceans during the ten-year period of 1985-1994. Existing meteorological and oceanographic observation systems have been maintained and expanded by TOGA while new networks have been installed in key locations. These observations along with available historical data will provide a description of the ocean-climate system and its variability from sub-seasonal to interannual scales.

TOGA Sea Level Center

The TOGA Project, realizing the importance of sea level data for research in ocean dynamics and for the monitoring and prediction of oceanographic processes, has established a TOGA Sea Level Center at the University of Hawaii. It is the purpose of the Center to collect all sea level data taken by island-based and coastal tide gauges in the TOGA area between 30°N and 30°S during the ten years of the TOGA project, 1985 to 1994, and to make them available for research. The TOGA Sea Level Center also obtains and archives past sea level data for the same region, when they are made available from the originators. Hourly, daily, and monthly values are prepared and archived, the data are stored digitally on magnetic tape, and are passed on yearly to other TOGA data centers, to the Permanent Service for Mean Sea Level (PSMSL), and to the World Data Centers A, B, and D for Oceanography. The TOGA Sea Level Center also supports the Global Sea Level Observing System (GLOSS). The importance of sea level data has been enhanced by the need for calibration of satellite altimeters such as GEOSAT, and for the TOPEX mission planned for WOCE.



Joint Archive for Sea Level (JASL)

Through the creation of the Joint Archive for Sea Level (JASL) with the University of Hawaii, the National Oceanographic Data Center, serving as a Specialized Data Center, is providing data management for this effort and assisting in the acquisition, processing, quality assurance, archiving, and dissemination of the data. The Joint Archive for Sea Level submits sea level time series data updates to NODC on a yearly basis. These updates may include data from new stations, as well as previously unprocessed data from existing stations. In addition, the updates may include data previously submitted to NODC that have been reprocessed to improve data quality. Therefore, to update the sea level data files for a station already in the database, NODC completely replaces the data time series for that station with a new version that may include both new and reprocessed data.

Availability of JASL Data through WDC-A, Oceanography

NODC maintains the JASL permanent archive of sea level data in three archive data files that contain hourly data, daily data, and monthly data. Data for the entire data base or selected subsets can be retrieved from these data files and provided to customers on magnetic tape or - for small data volumes - on a floppy disk at prices determined by data volume and output medium.

The JASL data set is available from:

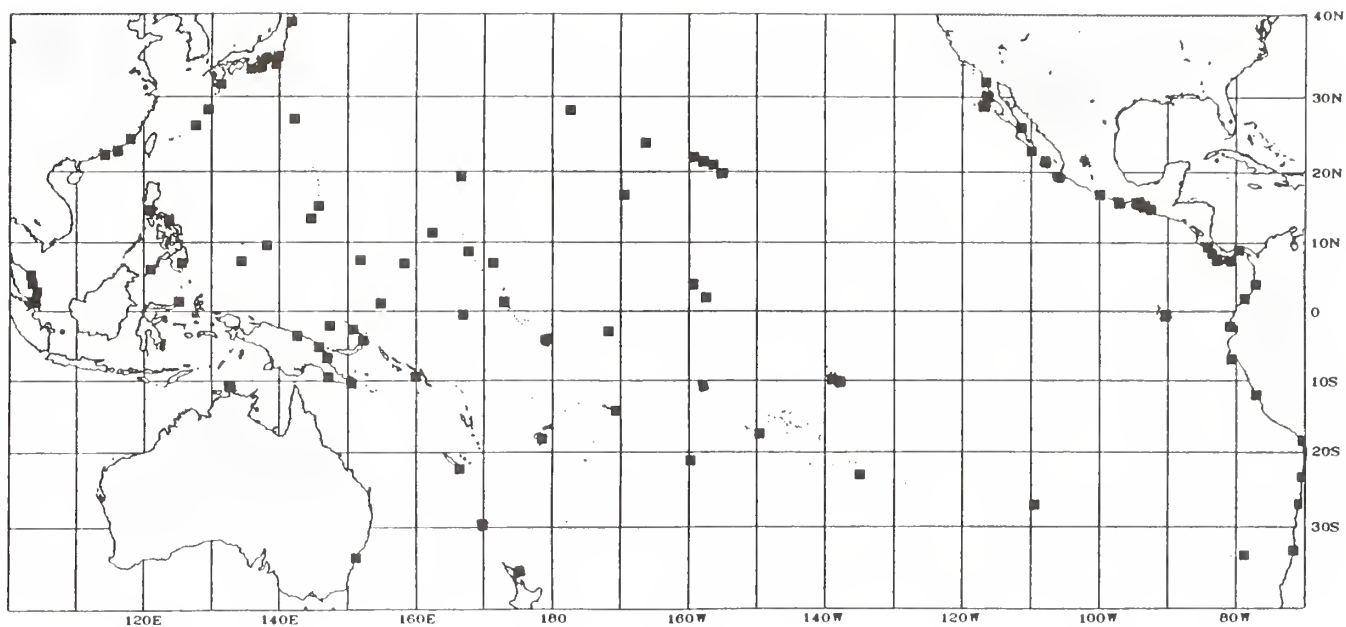
World Data Center A, Oceanography
National Oceanic and Atmospheric Administration
Washington, D.C. 20235 U.S.A.

Email: wdca@nodc.noaa.gov (Internet)

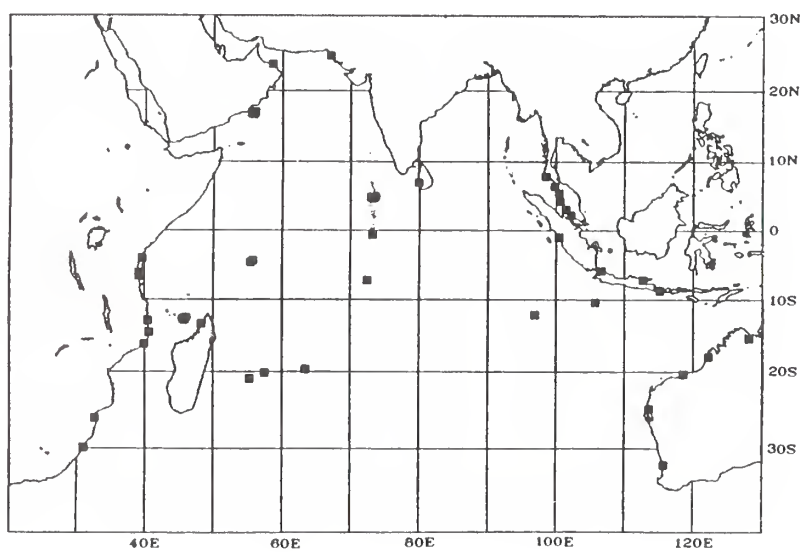
Certain stations may have unresolved problems. These data are retained at the TOGA Sea Level Center and may be obtained on a case-by-case basis. For these data and for questions concerning data preparation contact:

The Joint Archive for Sea Level
c/o The TOGA Sea Level Center
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Pacific Ocean sea-level stations with quality-controlled data in the JASL archive



Indian Ocean sea-level stations with quality-controlled data in the JASL archive

GTSP

GLOBAL TEMPERATURE - SALINITY PILOT PROJECT

INTRODUCTION

Making ocean temperature and salinity data quickly and easily accessible to users is the primary goal of the Global Temperature-Salinity Pilot Project (GTSP). A cooperative international project, the GTSP has now developed a global ocean T-S data base comprised of data that are as up-to-date and of the highest quality possible. Countries contributing to the project are Australia, Canada, France, Germany, Japan, Russia, and the United States.

U.S. PARTICIPATION

The U.S. supports the GTSP through the participation of its National Oceanographic Data Center (NODC). The NODC fulfills several functions in support of the GTSP:

1. **Data communications support.** The Internet is used daily to transmit and receive data and project information. Real-time data are relayed from NOAA's National Weather Service and the Navy's Fleet Numerical Oceanography Center to Canada's Marine Environmental Data Service (MEDS). In addition, monthly files are transmitted to oceanography centers in Hobart, Australia; Brest, France; La Jolla, Calif.; Miami, Fla.; and other locations in the United States. Each month approximately 30 megabytes of GTSP data are received or transmitted using FTP (file transfer protocol) over the Internet.

2. **Data quality control.** All GTSP data are passed through standard data quality tests, which are documented in the GTSP Real-Time Quality Control Manual (Intergovernmental Oceanographic Commission Manuals and Guides No. 22, Unesco, 1990). In early 1994, the NODC implemented two systems to apply quality tests to data destined for the GTSP database. The systems operate on UNIX-based workstations that are part of NODC's new client/server computing environment. One system displays geographic positions of observations as compared to landmasses, and shows ship speed between observations as a check on positions, dates and times. The second system applies tests to subsurface temperature and salinity data, setting flags to reflect test results.

3. **Database maintenance.** GTSP data are maintained in a relational database that is managed by commercial software on a UNIX work station. Real-time data are added automatically, as they arrive from MEDS three times per week. Higher quality delayed mode data

are now being quality controlled and added to the database. As these observations are added, the matching real-time data are tagged to avoid sending two copies of the same data. The database makes it possible to quickly load and retrieve data, as well as to provide statistics about the number of observations per geographic region, time period, ship, or data type.

GTSPD DATA

Data in the GTSPD database are generated by ships or buoys from all regions of the world's oceans. Instruments used to collect the data include thermistor chains (on buoys), XBTs, digital bathythermographs (DBTs), bottle samplers, and CTDs. The data are sent in real-time (by radio or satellite transmission) and later in delayed mode when ships return to port.

Delayed-mode records are generally of higher resolution than records sent in real time. Therefore, NODC acquires delayed mode data (usually several months after data were collected) and merges them into the database. To avoid duplication of real-time and delayed mode observations, real-time records are matched to corresponding delayed mode records in the database. In that way, the GTSPD data resource is built quickly from real-time records and subsequently enhanced by high quality, high resolution delayed-mode records.

SUPPORT TO CLIMATE RESEARCH

NODC continues to provide monthly files of real-time data to WOCE Upper Ocean Thermal science centers in France, Australia, and the U.S.; each of these centers uses the data in ocean climate research. Results of their scientific analyses are fed back into the GTSPD database to enhance data quality. Also, in support of WOCE, NODC now produces reports of the distribution of data along TOGA-WOCE-IGOSS transect lines.

GTSPD has demonstrated the feasibility of a global ocean network of data management and science centers. The project has shown that computer technology and networks, now in place, are sufficient for sustaining cooperative work such as that being done in GTSPD. Experience gained from GTSPD will be useful to future global ocean data management projects, such as the Global Ocean Observing System (GOOS).

To obtain information about the availability of data from the GTSPD Data Base, as well as participation in the Project itself, please contact the following:

National Oceanographic Data Center
NOAA/NESDIS
Washington, D.C. 20235 U.S.A.

Email: wdca@nodc.noaa.gov (Internet)

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